US. ADM.
IBRARY

MAY 19 1939

JOURNAL of FARM ECONOMICS

Contents

Economic Criteria for Classifying Nonurban Land According to Probable Best Use..... *David Weeks* and *H. R. Josephson* 419

Germany's Bid for Agricultural Self Sufficiency..... *Benjamin Higgins* 435

Evolution of a Plan for Intra-Association Shifting of the Capital Obligations Among Members..... *H. E. Erdman* and *Weston W. Taylor* 462

Status of Agricultural Trade Unions in Holland..... *Sidney C. Sufrin* 470

Economic Aspects of Hybrid Corn..... *A. A. Dowell* and *O. B. Jesness* 479

Notes and Reviews..... *See inside cover*

Published by

THE AMERICAN FARM ECONOMIC ASSOCIATION

Volume XXI MAY, 1939 Number 2

Contents (*continued*)

Notes

Intensity and Land Rent—A Reply ..... *David L. MacFarlane* 489
Some Economic Aspects of University Patents ..... *William H. Nicolls* 494
Type of Farming Research Again ..... *C. L. Holmes* 498
Relation Between Corn and Wheat Futures ..... *Malcolm Clough* 500
Agricultural Adjustment and Marketing ..... *Henry E. Larzelere* 503
Recent Farm Loan and Real Estate Experiences of Five Leading Life Insurance Companies ..... *J. H. Dickerson* 507
Publications Received 512

Reviews

Hicks, J. R. Value and Capital ..... *A. G. Hart* 513
Nourse, Edwin G. and Horace B. Drury. Industrial Price Policies and Economic Progress ..... *Sam. H. Thompson* 515
Reid, Margaret G. Consumers and the Market ..... *J. M. Cassels* 517
Monroe, Day, Hazel Kyrk and Ursula B. Stone. Food Buying and Our Markets ..... *J. M. Cassels* 517
Vaile, R. S. and Helen G. Canoyer. Income and Consumption ..... *H. E. Erdman* 520
Odum, Howard W. and Harry Estill Moore. American Regionalism ..... *Leonard A. Salter, Jr.* 521
Bunce, Arthur C. Economic Nationalism and the Farmer ..... *Harald S. Patton* 524
Decken, Hans, v. d. Entwicklung der Selbstversorgung Deutschlands mit Landwirtschaftlichen Erzeugnissen ..... *H. H. Stippler* 527
Brandt, Karl. The German Fat Plan and Its Economic Setting ..... *Warren C. Waite* 529
Bressler, Raymond G., Jr. and John A. Hopkins. Trends in Size and Production of the Aggregate Farm Enterprise, 1909–36 ..... *R. R. Renne* 531
Shaw, Eldon E. and John A. Hopkins. Trends in Employment in Agriculture, 1909–36 ..... *R. R. Renne* 531
Jasny, N. Research Methods on Farm Use of Tractors ..... *George A. Pond* 534
Mosher, M. L. and H. C. M. Case. Farm Practices and Their Effects on Farm Earnings ..... *W. D. Goodsell* 535
Hanson, Simon G. Argentine Meat and the British Market ..... *C. L. Harlan* 538
Duddy, Edward A. and David A. Revzan. The Changing Relative Importance of the Central Livestock Market ..... *A. C. Hoffman* 540
Easterbrook, W. T. Farm Credit in Canada ..... *Fred L. Garlock* 541
Congrès International de la Population, Paris 1937 ..... *C. Arnold Anderson* 543
Hooker, Elizabeth R. Readjustments of Agricultural Tenure in Ireland ..... *Caroline B. Sherman* 544
Thompson, J. M. The Orange Industry: An Economic Study ..... *Roy A. Ballinger* 546
Wellman, H. R. and M. D. Street. Maintenance of Substantial Equity in the Pooling of Lemons ..... *Roy A. Ballinger* 546
News Items 548
Memorials 553

Price: $5 per year, this issue $1.25

Entered as second class matter at the post office at Menasha, Wis. Acceptance for mailing at a special rate of postage provided for in the Act of February 28, 1925 paragraph 4, section 412, P. L & R., authorized November 27, 1931.

JOURNAL
OF
FARM ECONOMICS

Vol. XXI May, 1939 No. 2

ECONOMIC CRITERIA FOR CLASSIFYING NONURBAN LAND ACCORDING TO PROBABLE BEST USE[1,2]

DAVID WEEKS[3] AND H. R. JOSEPHSON[4]
University of California

LAND utilization investigations in the northern Sierra Nevada foothills of California have afforded an opportunity to appraise several economic criteria for the classification of land into categories, each representing an adaptation to a given major use or combination of uses. These criteria are discussed in this paper for the purpose of indicating their usefulness as an economic basis for:

1. Locating appropriate margins between different uses of land or between different combinations of uses.
2. Judging the optimum geographical limits within which given land use policies may be applied.

Before proceeding with a discussion of the criteria considered in the California studies, a brief review of other work may center attention upon the importance of the present effort.

Criteria Which Have Been Used in Classifying Land According to "Best Use"

Economic classification in various land use investigations

[1] Paper No. 78, the Giannini Foundation of Agricultural Economics.

[2] The authors are indebted to Mr. Martin Maevers, recently of the California Forest and Range Experiment Station, for valuable points of view and suggestions from his unpublished manuscript on the theoretical aspects of this problem.

[3] Associate Professor of Agricultural Economics, Associate Agricultural Economist in the Experiment Station, and Associate Agricultural Economist on the Giannini Foundation.

[4] Assistant Forester, California Forest and Range Experiment Station, United States Forest Service.

throughout the United States have used several criteria.[5] The measures for determining "best use" have not always been clearly described, however, and usually have been implied rather than stated definitely. In these various studies the delineation of use areas has been based upon several measures such as the physical productivity of soil, standard of living, or such economic indexes as tax delinquency, farm abandonment, and public costs for schools and roads.

In a study made by Veatch in Michigan,[6] the criterion used in classification was based upon the physical productivity of land for producing agricultural crops. On the basis of correlation between nitrogen content of surface soil and land productivity and value, Hammar[7] has pointed out the possibility of giving lands an economic classification according to nitrogen content. In North Dakota,[8] physical productivity, extent of land types, and accessibility to market were the measures used in rating units of land for purposes of tax assessment. Criteria used in New York State[9] involved the "intensity of use to which the land is adapted," based on soil character, land use, condition of farm buildings, and the relative amounts of public expenditures and tax receipts.

Standard of living, together with public costs and incomes, constituted the measure of "best use" used by Peck and Eke in a study made in West Virginia.[10] An arbitrary "operator's net income" of $1,200 was selected as the criterion of marginality, this net income including both farm income and outside supplementary income. Lack of alternative opportunities for employment, however, not only presents difficulties in defining a marginal income but also may involve continued occupation of "submarginal" land.

[5] For a discussion of land use studies, see Charles Goose, Progress in Rural Land Classification in the United States. Land Policy Circular Supplement, December, 1935.

[6] Veatch, J. O. Agricultural land classification and land types in Michigan. Michigan Agr. Exp. Sta. Spec. Bul. 231. 1933.

[7] Hammar, Conrad H. An approach to the grading of land for purposes of appraisal. Jour. Farm Econ., 18 (3): 523–532.

[8] Kellogg, Charles E., and J. Kenneth Ableiter. A method of rural land classification. U. S. Dept. Agr. Tech. Bul. 469. 1935.

[9] Lewis, A. B. An economic study of land utilization in Tompkins County, New York, Cornell Agr. Exp. Sta. Bul. 590.

[10] Peck, Millard, Bernard Frank, and Paul Eke. Economic utilization of marginal lands in Nicholas and Webster counties, West Virginia, 1932.

Zoning and land use studied made in the Lake States[11] involved an economic classification of land into major use areas on the basis of such factors as public costs and returns involved with settlement, tax delinquency, farm abandonment, physical productivity of soils, trends in forest and recreational use, the settlement pattern, and market and social institutions.

Criteria mentioned by L. C. Gray[12] with regard to the submarginality of farm land included "such questions as whether the land is capable of providing its operators with what we consider an adequate level of living, whether superior alternatives are available, whether the pattern of land occupancy and use is socially desirable, and whether the land resources are being adequately conserved—in other words, whether the land is properly serving the general welfare."

Individual judgments without the guidance of criteria which have been given the test of professional criticism have resulted in a general lack of uniformity in results. The main causes of this situation are:

1. Confusion concerning goals.
2. Lack of a clear understanding of the probable incidence of benefits or detriment of proposed alternatives in land use upon individuals and different groups of society.
3. The absence of a clear statement of the basic theory underlying economic classification of land.
4. The difficulty of devising and applying measures of the relative economic productivity of alternative uses of land, which are consistent with this theory.

Basic Assumptions

Since net real income represents goods and services which satisfy wants, increased net real income is assumed as the goal in land use adjustment. This assumption does not ignore the fact that a given net income may buy greater satisfaction for one family than for another, especially if these two families are of different size or are in different localities. The

[11] Wisconsin University, College of Agriculture, Extension Service. Making the best use of Wisconsin land through zoning, 1934.

[12] Gray, L. C. The Social and economic implications of the national land program. Jour. Farm Econ., 18 (2): 257–273. 1936.

man in overalls in the foothills, for example, may obtain greater satisfaction per dollar of income than the man in a dinner jacket in the city. Adequate shelter and clothing in the tropics will require smaller purchasing power than in the temperate zone. Notwithstanding such discrepancies between the amount of income and the satisfaction of wants derived from the use of that income, it may be assumed that in general the estimated money value of real income is closely associated with the degree of satisfaction derived from it. In general, any land use which will result in a higher net real income to families living in a given area can be accepted as being more desirable than one giving a lower net real income.

Real income is a fairly simple concept from the standpoint of the individual, but application to a social group requires not only a broader basis of calculation but also a further definition of goals. In the calculation of net real incomes of a social group, elements of cost and of income require consideration which may not be involved in the analysis of individual income. The aggregate of net real incomes of any group or any area, defined in this discussion as social net product, may be changed by land use adjustments. There are usually social costs in any planned land use adjustment that must be balanced against the benefits to be derived by society. Furthermore, the number of families supported by an area in proportion to the social net product has an important bearing upon the significance of that social income.

Moreover, differentials in the net real incomes of individual families affected by land use adjustments introduce the necessity of determining which of a number of alternative frequency distributions of net real income indicates the best situation. An increase in real incomes in the lower quartile of the income distribution may be considered of greater importance than the same increase in the upper quartile. The trend of popular opinion as registered at the polls appears to give somewhat greater weight to size of incomes in the lower portion of the income distribution. Thus the shape of the income distributions from land use alternatives is of importance along with per-capita income and aggregate income from an area.

Permanence of income likewise is an essential factor which must be included in a statement of the goals in land use adjustment.

Goals may be summarized as follows:

1. Increased per-capita net real income.
2. Reduced dispersion of incomes.
3. Permanence of income.

Theoretical Considerations

In developing a method for determining and measuring income according to these goals, certain economic concepts may be useful. Brinkmann,[13] developing further the classical theory of location of production introduced by von Thünen, has explained that land rent is related to the location of the different lines of production through its dependence upon the price relationship between product and expense. Specialized types of land utilization are brought about by "forces of differentiation," which include costs of transportation, natural conditions such as climate and soil, and the personal qualities of the entrepreneur, and which act through their effect upon rent. Brinkmann's "forces of integration," also acting through their effect upon rent, originate in the interrelationships between the different enterprises on the farm, each extending to the margin, and tending to bring about diversification of land utilization. It is pertinent to ask, however, whether the emphasis on rent is an adequate basis for classifying land according to its probable best use considered from the point of view of public interest.

With perfect competition and a small degree of variation in the distribution of incomes, it is to be expected, as many economists have pointed out, that land uses yielding maximum rents may approximate the conditions for obtaining maximum social net product. Although land tends to be used for that purpose which yields the highest rent, differentials in rent arising from alternative uses of land do not measure completely the differential in total net product. The use which pays the highest rent also may increase the dis-

[13] Benedict, Elizabeth Tucker, Heinrich Hermann Stippler, and Murray Reed Benedict. Theodor Brinkmann's Economics of the Farm Business. 172 p. University of California Press. 1935.

persion of the distribution of income among the different contributors to the total net product. While net land income is significant in determining and explaining the form of land use under private ownership and free competition, rent does not always indicate social values and hence is not a complete measure of differential productivity.

Net land income even as a measure of private net product is subject to a number of limitations. It is usually difficult to estimate the amount of alternative rents from different uses. Cash rents may not coincide with economic rents, and may be influenced by temporary changes in the economic situation or by long continuing adherence to custom. Cash rents in a given locality, even when land quality is fairly uniform, usually are highly variable because of imperfect competition, inclusion of returns on capital, and payments for landlords' services. When resort is made to the accounts of entrepreneurs for estimating rents, additional difficulties arise. Rents of the owner-operator are parts of a residual return on the operator's labor, capital, management, and land. The net land income may be calculated at widely differing amounts, depending upon the residual shares imputed to labor and to capital. Imputed rents may be expected to have even a greater variation than cash rents and they are subject to all of the errors of imputation from data which are characteristically inaccurate.

Although frequently omitted, a complete estimate of rent would contain an allowance for non-cash services enjoyed by land owners. The farm is not only a business but also offers the farmer food, home and environment. The location with respect to schools, churches, stores, meeting places, scenery, recreation, and roads, and the character of the population all enter into the real net land income. This type of income is difficult to estimate in terms of money value.

Land prices are not always a good index of net land income. High prices for land in many cases are based on expectations of incomes that never materialize. Land prices may be high also because of inclusion of payments for intangibles such as the privileges which in many countries are connected with the ownership of estates. Farmers often find satisfaction in adding more and more land to their possessions

for reason of pride, while others wish to secure for themselves a permanent opportunity to work.

The time of realizing land income also presents a problem in comparing net land incomes from different uses. Agriculture usually yields a continuous though highly variable income. Returns from forestry, on the other hand, are usually periodic. In the California foothills dredge or hydraulic mining, representing an extremely short-time present use, it is a type of land utilization in competition with the permanent uses of grazing, forestry, or crop agriculture. In other parts of the foothill area of the Sierra Nevada Mountains, livestock ranchers frequently remove timber stands with high potential incomes, realizable only in the distant future, in order to obtain present incomes.

Bidding for land may indicate a higher preference for uses yielding present incomes, than for alternatives yielding larger deferred incomes. It is clear that capitalization rates have an important affect upon the results of comparing incomes from different uses, particularly under conditions of unregulated private ownership. A low rate of capitalization of annual agricultural incomes may show a land value for agriculture that will exceed the value for mining use while a high capitalization rate may indicate the reverse. Present need of income and the risks and uncertainties of future returns place a deferred income on a different basis of estimate than that of a present income. Social considerations involving generations and centuries may justify a low capitalization rate for deferred incomes.

In a new country with a great deal of free land and other resources the action of the individual members may by no means coincide with the long-run views of society. In a new country the most remunerative methods involve the exploitation of natural resources, followed by a shift to new grounds. The effect of such a system, especially when occurring on rich soils, is that at least temporarily a relatively high standard of living develops. Where depletion occurs, returns from land may be higher than the long-time rent which allows for maintenance of fertility. Competitive rents during periods of development, therefore, may have been higher than the rents which could be maintained over long periods, and may

or may not have been consistent with long-run social interests.

Although under private ownership, usually land is used in such a way as to realize apparent maximum returns, the receipt of income may be of short duration, or the conduct of the business from which income is derived may result in losses to others. The philosophy of land use and the policies affecting use have favored individual private interests to a large extent with little recognition of social values. While rent measures that part of the total income received by the owners of land, it does not indicate total incomes nor the distribution of income among members of a community. Rent is an important measure of income but does not provide an estimate of the income distributions resulting directly or indirectly from changes in land utilization.

Increment or decrement in rent resulting from a change in land utilization, therefore, is not an accurate index of the change in social net product.

In further search of a basic theory, it may be well to explore the possibilities of a broader application of the marginal productivity analysis to the economic classification of land. The need for land use adjustment implies the existence of a less than optimum distribution of land resources among various uses, even though other productive factors may be applied in approximately the optimum combinations for the existing uses of the land. A shift to a better distribution of land among different uses implies that there will be opportunity for greater and/or more beneficial employment of land. Such a shift also implies that there will be a better employment of other factors of production as well as of land itself. Returns to all factors would tend to vary, since the marginal productivity of each factor is dependent upon the quality and upon the supply of the other factors.

Although an examination of differences in private net product is fundamental, it must be kept in mind that the measurement of probable social net returns from the various alternatives of land use is the goal. The employment of any resource in a given use might economically be extended up to the point where the marginal increment could be utilized

to increase the social net product by a greater amount if employed in another use.

This approach has been proposed and to some extent applied in recent farm management research. Its extension to land utilization research, however, involves a reorientation away from the economy of the individual enterprise and toward the economy of society as a whole, or of one of its many groups. This is the fundamental aspect of land use adjustment. The procedure, however, would consist, not merely of balancing marginal costs of a given land use combination to a given social group against marginal returns to that group, but would consider also the distribution of returns among the different members of the group. Furthermore, definite values must be placed upon intangible social benefits and detriments which heretofore have been much talked about but seldom appraised, and some decision would have to be made concerning the relative importance of future and present benefits. The procedure, at least at first, would necessarily be in part qualitative and in part quantitative.

Measurement of Expected Increment in Social Net Product from Land Use Adjustment and the Determination of Its Distribution

The problem of land use adjustment, therefore, resolves itself into considering qualitatively a number of possible combinations or patterns of land use and selecting the more promising ones for more detailed analysis which would consist primarily of the following:

1. Measurement of the increment in net value to society of products and services which would result from substituting alternative land uses.

2. Estimate of the probable shift in the frequency distribution of net real incomes of the population affected.

If land uses in different parts of the area under consideration were independent of one another, the increment in the aggregate real income of the total area resulting from a given change in land utilization in a portion of that area might be estimated without calculating gross returns of the entire area. Interdependence of land uses, however, is the rule

rather than the exception. The ideal procedure would be to estimate gross income for the entire area and from this obtain net area income by subtracting material costs, depreciation and maintenance of land and capital. Where land uses are fairly independent or where the task of calculating net area income involves prohibitive costs, it may be possible to limit calculations to portions of the entire area and to less than the entire economy of that area. Even when this is done, effort should be made to evaluate the effects of interdependence of land uses in different parts of the area.

Gross Area Income

In the calculation of net area incomes for alternative land uses, determination of gross area incomes is an essential step. Gross income from different land uses represents the sum of the various incomes to the factors of production, including allowance for maintenance of capital and for purchase of materials used in production. Gross income cannot be used alone as a measure of productivity, however, for the efficiency with which products are obtained is important.

The capacity of land for using labor and capital in a given use becomes an element of great importance especially under conditions of unemployment. Costs to the entrepreneur represent incomes, both to other members of the community and to others outside of the local area. Each part of the gross income of an enterprise ultimately represents a payment to a factor of production. Crop use may yield a gross income of $20 per acre compared to $5 for grazing, but if grazing yields a larger net rent to the land under private ownership, the probable use will be grazing. At the margin where rents are approximately equal, however, land in agricultural crops because of the greater capacity for input of labor and capital, may be considered as far more productive in terms of total product and amount of employment provided.

On lands of high capacity, where investments of labor and capital are large, social returns may be great in proportion to operator's returns. Efficiency of such land may be quite low when measured in terms of output per unit of input, but others in the community besides the operator are benefited through receipt of wages by hired labor, rent by land owners,

and interest by owners of capital. Efficiency is important, however, particularly under conditions approaching full employment, and for long-time policies a pattern of land use of highest possible efficiency should be considered as an objective in producing social returns.

Gross income, therefore, may be significant as an indication of the income available for population support. Used in conjunction with certain indices of efficiency and costs, gross income is a useful measure in indicating the combination of land uses that will result in the largest production from the utilization of natural and human resources in a particular area. The amount of gross production and the shares for land, labor, and capital remaining within a local area, supporting local business and population, are of particular importance from the standpoint of local and state groups.

Included in gross income are nonmonetary or unmeasurable values which frequently are of importance in judging the advantages of different uses. Thus the more or less unmeasurable benefits from various forms of recreation may be of significance with certain uses such as timber production or game management. Public interest may also consider the benefits accruing from what are regarded as socially desirable types of communities. The stabilization of income, avoidance of isolated settlement, and maintenance of social institutions usually are considered of importance in land utilization adjustments. Within this group of intangibles may be included the quality and value of public services such as schools, roads and other improvements. Many of the benefits to be derived from certain types of community land uses may become more tangible and measurable as knowledge is developed concerning them. Though qualitative analysis is the only means of arriving at a judgment concerning their importance, some account should be made for intangibles in calculating gross returns.

Relation of Land Use Adjustments to Prices

Any change in the land use pattern if extensive enough may affect prices and therefore gross returns. Land use adjustments also may result indirectly in changes in income

distributions for populations outside an adjustment area. If changes in land use are carried out on a large scale, or if the policy of land use adjustment is to be extended to country-wide application, prices may be affected to the extent that the net gain in physical product may be offset by lower prices. The advantage of adjustments may thus be shifted to other groups in the general population at the expense of the producers of products which are important in the local area. A qualitative analysis of the characteristics of demand for commodities entering into land use plans therefore becomes of essential importance and will tend to guard against production of commodities which cannot be sold at the prices used in determining the feasibility of adopting that type of land use. Similarly, it may not be feasible to expand production of a given commodity in the local area in response to an increase in demand if other areas can supply the increased output at a lower cost. A qualitative analysis of the characteristics of supply for specific commodities may indicate the competitive position of different areas and the feasibility of local expansion. Analyses of supply and demand are admittedly in their infancy but require the best treatment possible in problems of area analysis. It may be some time before research can develop quantitative measurements of such items for determining the location of optimum land use margins. Knowledge of the direction in which supply and demand forces are working, however, will aid greatly in the support of qualitative judgments.

Trends in population growth, technological progress, or trends in foreign trade constitute unknowns in the land use adjustment equation which tend to force the problem ultimately to a judgment solution and which explain in part the gap between theory and procedure. Rather than justifying the abandonment of theory, however, these unknowns increase the necessity for formulation of principles for the guidance of judgment.

Net Area Income

Net incomes obtainable from alternative land uses may be expressed in terms of net area income, which is defined as the contribution of an area to the national social net product. It

can also be thought of as being the social net product of that area, or as the aggregate of all of the net real incomes produced in the area. If the costs of materials used in production in the area and depreciation of land and capital are deducted from the gross income of the area, an estimate of net area income will be the result. This net area income is made up of the distributive shares to the factors of production. Calculations of net incomes for different patterns of land utilization will provide the basis for estimating the change in social net product to be expected from any given adjustment.

In calculating net area incomes costs, such as declining fertility, erosion of hillsides, silting of reservoirs, and—jeopardizing of water supplies—should be included even though estimates may necessarily be only approximations. Support of governmental services by populations outside the area under consideration may also represent part of the costs of producing the net area income.

Distribution of Social Net Product

While it may be impossible to determine accurately the distribution of the social net product, important effects upon different population groups resulting from proposed changes in the land use pattern usually can be determined. To this end changes within the area itself can be approximated by income analysis of various groups such as livestock producers, fruit farmers, laborers in lumbering and forestry, miners and part-time farmers receiving income from various sources. Within each of these groups estimates may be made of net family income on the basis of selective sampling.

Net Family Income

Net family incomes may include residual returns to land, labor, management and capital of operator-owners, the returns to those responsible for the investment of capital, and wages of labor used in conjunction with the utilization of the resources of the area. Family incomes frequently are made up of a combination of these shares, as in the case of ranch operators. In the case of timber production the distributive shares usually are somewhat more clearly separated than in

agriculture. With the exception of the mill owners and the timberland owners, who frequently live outside the local areas, family incomes of forest workers ordinarily are made up only of wages.

Wide variations in family income are more or less characteristic, partly because of differences in capacity of individuals and partly because of variations in opportunities. In the California foothill area a sample of livestock ranchers showed that family incomes in 1935 varied from about −$196 to +$8,342. Forest workers in the foothills obtained annual incomes varying from approximately $300 to $1,500.

In comparing alternatives, the attempt may be made to compare a frequency distribution of existing family incomes, adjusted to represent long-run economic conditions, with similar distributions estimated for various trial land use patterns for the community as a whole. Comparison should be made not alone on the basis of differences in total income but upon changes in the distribution, especially in the lower brackets. A program adopted on the basis of such comparisons must anticipate also both the direct and the ultimate incidence of benefits. Net family incomes from alternative forms of land use may also be summarized to indicate total and per-capita incomes, as well as the shape of the income distribution. Intangibles in the form of psychic income from the environment or governmental and social institutions should also be included in family income to give an approximation to total net real income.

Density of Population and Alternative Employment

As population increases in an area, total productivity may be increased but, due to diminishing returns, total, average, and individual family incomes tend to decrease. A large number of ranches in areas of limited productivity such as the upper foothill livestock area in the Sierras, for example, usually are associated with small-sized enterprises and small family incomes. A large number of small subsistence type farms with low family incomes may have as their alternative a few large-scale ranches capable of maintaining a relatively high standard of living, together with a large displaced population. Such a condition may be of importance in the granting

of preferential grazing rights in the national forests. Should efficient large farms supporting a small population displace the small inefficient type of farm through the instrumentality of a federal grazing policy? The amount and type of alternative employment available to populations affected by land use adjustments may determine the feasibility of shifts in land-use patterns. Alternative opportunities are determined in part by the experience, training, and personal qualifications of the population involved, and by the general employment situation. Comparison of incomes expected from different patterns of land utilization with those from other employment opportunities involves the difficult problem of determining the relative advantages as well as the existence of such alternatives of employment. The answer to the question of numbers that can be maintained is dependent upon general employment conditions, upon opportunities for introducing types of land utilization and land use policies favorable to employment, and upon general conditions of supply and demand for commodities which may be produced in the area.

Under conditions of unemployment, labor as an input factor apparently does not have the same significance as under full employment. Where changes in land use would give employment to unemployed workers, the estimated cost of producing the new products may have a wide variation; for example, payments to labor in such a case might be set anywhere above the minimum of maintenance, or the minimum of relief payments, or up to the wages of regularly employed workers. The manner in which wages are estimated for new land use combinations will determine the total income and the shape of the frequency distribution of incomes obtained within a community.

Weighting of Criteria

When the analysis has reached the stage where alternatives can be compared on the basis of these three criteria of per-capita income increase, permanence of income, and income dispersion, judgment of those to be affected will have to decide which land use alternative is most appropriate. Income increase will probably govern decisions unless the

other two criteria are too far out of line. A situation is quite possible, however, where an average per-capita income decrease may be preferable in order that a living may be insured for all the existing population.

Research in land utilization has as a principal function the determination and analysis of incomes obtainable from land use alternatives, and the determination of probable consequences of land use policies. The criteria discussed in this paper will provide a basis for analysis of alternative uses and plans, although adoption of specific measures depends upon the electorate and administrative agencies.

GERMANY'S BID FOR AGRICULTURAL SELF SUFFICIENCY

BENJAMIN HIGGINS[1]

Graduate School of Public Administration, Harvard University

IN THIS paper the term "*self sufficiency*" is used in a broad sense to cover any policy designed to increase domestic production and/or reduce imports. Upon this definition, "self sufficiency" in Germany is not entirely the invention of the National Socialists. During and after the war, agriculture in Germany was subject to various kinds of government control, some of which were designed to enhance domestic production. Measures for assuring an adequate supply of agricultural labor were enforced; special credit aid was given to farmers; in 1925 the introduction of high tariffs on grain led to the imposition of protective tariffs on other agricultural commodities. In the same year the program of the German National Party included independence in foodstuffs and raw materials. Schleicher's Minister of Agriculture (von Braun) announced officially that price legislation had led to self sufficiency in grains. The financial panic of 1931 left Germany with a gold reserve equal to about 0.5 per cent of her note circulation; if the illusion of remaining on the gold standard was to be maintained, Germany could not afford even a short-run unfavorable trade balance, so that restriction of imports and expansion of domestic production was a virtual necessity.

Only after 1933, however, did "Autarky" for military purposes become a conscious part of German policy. Before the advent of the Nazi government there were only a few disconnected measures; since then, agriculture has been subjected to a more or less comprehensive program for self sufficiency.

General Survey

The formal agricultural program of the National Socialists is as old as 1930, when Darré was called upon to organize the Nazi movement among the farmers. Darré, now Minister of

[1] My thanks are due to Dr. John Galbraith, Dr. L. M. Lachmann, and Dr. K. Mengelberg, for reading all or parts of this paper and making suggestions.

Agriculture and Nutrition, stated in the preamble of the official program that the reasons for low farm incomes were: discriminating tax policy due to Jewish financial influence in parliament, insufficient tariff protection, exploitation by Jewish wholesalers on the one hand and Jewish fertilizer and electricity concerns on the other.

Among the important features of the program were the following:[1a]

1. German soil, taken and defended by the German people provides a living area and the means of subsistence for the whole people.
2. Only German folk comrades may be in possession of German soil.
3. Land possession—is regarded as inheritable property. To this property right, however, is attached the duty to use the soil for the good of the whole people.
4. German soil must not be an object of financial speculation and must not be the source of effortless income to the owner.
5. The state assumes the task of carrying out a land settlement policy with the acquired (confiscated) land in keeping with the standpoint of an important population policy.—The choice of settlers will be determined by an investigation of their civic and vocational fitness as settlers.—The acquisition of food supply and colonization areas for the growing German people is the task of the German foreign policy.

Under the heading of "Immediate Policy" were the following principles:

1. The pressing needs of the country population must be remedied by tax adjustments and other particular measures.
2. The state must see to it that agricultural work pays. Domestic production must be protected.
3. . . . —building the farm labor vocational groups into the farm vocational community.—improvement of living conditions and wages of farm laborers.
4. Vocational advancement of vocational education and the revival of farm cultural life—.

H. Reischle translates the policy into more concrete

[1a] Cf. Holt, German Agricultural Policy 1918–1933, pp. 182–185.

terms:[2] Free play in liberalistic exchange did not produce equalization between the prices of agricultural and industrial products; "the price scissors which had been opened to the disadvantage of agriculture could not be closed," and therefore "the laws of the liberal economy had to be eradicated from the economic system." It will be noted that this idea is essentially the one which lay behind the AAA in the United States. Reischle also recommended an extension of large-scale methods to agriculture, hoping for results similar to those so successfully gained in industry through kartellization. In this regard he departs from the Nazi policy as originally stated, which included the partition of the large estates.

The "Corporation of Peasants" indicated the first step taken towards the establishment of a Corporative State. It was established in the fall of 1933, and the Ministry of Agriculture was given power to fix prices, production, and profits at all stages of any agricultural process. By 1934, as pointed out by the New Year newspaper articles and other annual surveys, agriculture was regarded as being essentially in its final form; agricultural prices were almost entirely independent of the "market."

At the head of the whole system of agricultural control is the Corporation of Agriculture, under the direction of the Ministry for Agriculture. Its subsidiaries are based to a large extent on the wide-spread co-operative organizations that already existed. The Milk Products Manifacturing Association controls the dairy industry, the Association of Mills controls the grain industry, and so on. Each of these groups is headed by a government appointed "Reichstelle" or commissary. The original function of the Reichstellen was to establish monopolies for the control of price, much like the agricultural monopolies set up in this country. As monopolization spread from production to marketing, in order to "equalize demand and supply" at the fixed price it was found necessary to buy up surpluses, and to fix the amounts bought by or delivered to processors and distributors.

[2] Grundlagen und Auswirkungendes Gestezes über den Reichsnährstand, in Deutsche Agrarpolitik, Oct. 1933. pp. 221–222. Darré himself writes as follows: "the farmer is no entrepreneur in the ordinary sense of the term. The food-producer cannot and should not take part in the game of price-making . . . because his function for the nation is extremely important." From, Im Kampf um die Seele des Deutschen Bauern, pp. 30–31.

Under the Reichstellen for each industrial group are several sub-groups representing the vocational interests concerned; for example, the Milk Products Manufacturing Association includes not only milk dealers, but creameries and cheese factories. Each of these vocational groups is self-governing, and receives its charter from the central government. The groups are organized vertically from the first stage to the last, and control is in the hands of the central Reichstelle in all stages.

Actual control of production and distribution did not follow immediately upon the legal authorization in September, 1933. Indeed, it was not until February, 1934, that the branches of industry which come under its direction were defined and classified.[3] Even then, centralization of control proceeded gradually by a succession of decrees; for example, fats, wool, hides, and pelts were placed under official regulation in March 1934, and in September, grain, fodder, livestock (with animal products), milk, oil and fats, and eggs were added. The "Vierteljahreshefte für Konjunkturforschung" reports over two years later (November, 1936) that "the construction of the agricultural market regulation will undertake several supplements and refinements during the coming year." These included the creation of a Bureau of Garden and Wine Production, to fill the gap in regulation with respect to these products. A couple of months later control of fodder cereals was tightened, and purchases of wood for pulping were subject to official permission. Producers, traders, and consumers of lumber were required to give monthly reports of stocks on hand. Subsequently, the government has found itself compelled to take over the regulation of more and more categories. Brewers as well as producers and traders in malt and hops, slaughterers and packers and tanners as well as raisers and traders of livestock, had to be brought under the administrative wing in order to make the decrees effective.

One of the difficulties involved in such regulation is the

[3] At that time agriculture was divided into ten groups: cereals, vegetables, etc.; livestock; brewing; sugar; starch and spirits; fish; fats and milk; food preparations and condiments, including wine; wood; and any other food retailers. All these were eventually to be regulated.

presence of widely varying grades of the same commodity, which makes control of prices and output extremely complicated. To circumvent this difficulty, the "Nährstand" has resorted to considerable standardization; for example, only five kinds of butter can be marketed, after being specified according to test, and cheese is limited to eight varieties, bread to five. More recently,[4] two grades of wheat flour previously permitted were abolished in order to establish a single quality.

While the industrialization of Germany has led to a chronic scarcity of agricultural labor, the heavy program of public works and rearmament under the Nazi régime, combined with the attempt for agricultural self sufficiency, has made this problem more intense. A decree of 1934, extended in 1935, forbade men and women hitherto engaged in agriculture to take other positions, and gave power to the National Institution of Employment Exchanges to require dismissal of previous agricultural workers from industry. The workers thus bound to the soil are compensated by being called "nobles," and are given armorial bearings displaying wheat and pigs. In November, 1937, agriculture was recognized as a skilled employment, and training courses set up with examination requirements. The seasonal movement into towns has led to introduction of long-term contracts for agricultural workers in an endeavor to offset this movement. In March of that year, over 44 million marks were placed in the Prussian Landesrentenbank for the construction of agricultural workers' dwellings, to rent for only 12–14 marks per month, as an inducement to workers to settle on the land.[5] By an order of February 1938, unmarried women under 25 cannot take other jobs until they have had one year of agricultural labor service, or domestic service. Despite these measures, agriculture still suffers from labor scarcity.[6]

With this all-too-meagre general background, we proceed to a study of the self sufficiency program in relation to particular groups of agricultural commodities.

---

[4] Reported in The Economist, Berlin letter, December 11th, 1937.
[5] Cf. Halbjahrsberichte zur Wirtschaftslage, 1937–38, Heft 1, p. 33.
[6] For a more complete account, see Vollweiler, The Mobilisation of Labour Reserves in Germany. International Labour Review, October, 1938.

Grains

We turn out attention first of all to grains. While Germany is far from being an ideal country for grain growing, her soil and climate are better suited for cereals than for most agricultural products. At the end of the war Germany was considered self sufficient in grains, although costs of producing grain are relatively high in Germany, so that a substantial amount of grain was imported—7.5 million tons net in 1927. Rye is more indigenous than wheat, but it has a lower nutritive value and is less satisfactory even for fodder than is wheat.[7] From 1914 to 1925, cereals entered Germany duty free. From 1925 to 1930, the tariff rates on grains were held steady at a very high level; on rye, for example, the tariff was approximately 40 per cent. In May of 1930 the tariff on grains was raised to a prohibitive level, except for wheat, of which Germany was producing comparatively little.[8] The duty on rye was RM. 15 per douzaine, which meant that the tariff itself was 50 per cent higher than the domestic price of Polish rye!

In 1930 the Reichstelle for grain was established, constituting the first real deviation from price-determination by free play of demand and supply in the domestic market. All grain entered the market through the Government Monopoly Bureau, which fixed price to the consumer by a varying tax on sales.

The tariff policy of the previous five years had led to a situation that was already uneconomic. In 1928 Germany had, next to Russia, the largest grain acreage in Europe; whereas Russia had only 10.2 per cent of her cultivated area under grain, Germany had 22.3 per cent. Surely these figures indicate a maldistribution of resources! Germany would have done better to follow the example of the Scandinavian countries after the war (as was considered) and devote the south and west entirely to intensive farming. Some other solution still would have been necessary for the north-east, where soil and climate are not suitable for intensive farming. If no solution could be found—such as, for example, grazing—it

[7] Cf. Vierteljahrshefte zur konjunkturforschung, 1929 Heft 20, from which most of this information is obtained.

[8] In 1927 wheat production was only 8.97 per cent of total field production; rye was 23.99 per cent, oats 17.72 per cent, and barley 7.56 per cent.

might have been better to let it go out of use altogether rather than maintaining production artificially.

The general policy of artificial aid to grain growing was continued under the National Socialist régime. Politically and philosophically, the policy was better justified than before, since Germany had embarked upon a conscious and officially stated program of self sufficiency. Economically, the same criticisms apply. Cereal production in Germany is simply too expensive, in terms of opportunity costs. During 1933 The German Cereal Control Board was compelled to expend a great deal of money to support the market, having instituted direct price control in that year. This artificial support was necessary despite the fact that the foreign supply on the German market had been reduced to approximately one-third of its pre-depression level. Regulation of flour prices was instituted as a necessary accompaniment to regulated grain prices, and to facilitate control, milling was permitted only through licensing. To carry out the policy of eliminating speculation from agriculture, dealing in grain futures was forbidden. Immediately after the harvest, the government set the regional prices for the whole year, allowing a small monthly increase to cover losses in weight, and storage, etc. About the middle of the year, Darré suddenly realized that the fixed price was too high, and that farmers were shifting to grain cultivation. Realizing too that grain production was too expensive in terms of alternative products, he issued a warning that the government support of the grain market was to be withdrawn, and urged farmers to turn to production of oil-seeds, flax, and fodder crops, the scarcity of which was already foreseen. The threat was not fulfilled (just as the threat—or promise—to partition the large Prussian estates was not fulfilled) and grain area was not reduced.

The 1934 harvest was 25 per cent lower than in the previous year, largely due to drought; total grain yield declined from 21 million tons to 17 million tons. Thus, the administrative situation was exactly reversed; the problem now was to keep prices down. There was a scarcity of grains both for direct consumption and for fodders. The public became nervous in anticipation of a food shortage, and as a result the

administration let down the bars to 1,371,500 tons of foreign grain, constituting an increase in grain imports of 110 per cent over 1933. Even then, the Reichstelle could not prevent prices from rising. From July to December, 1934, the official price of rye rose from 152.4 RM. per 1000 kilograms to 158.9; wheat rose from 192.4 to 198.9; fodder barley from 152.8 to 159.3; fodder oats from 151.1 to 157.6.[9]

The situation did not improve in 1935. The harvest was still below "normal," only 1.8 per cent above 1934. Imports were reduced to a point 7 per cent below the 1934 level, and exports were severely restricted. There was not even enough grain to fill the need for fodder, and the presence of certain food shortages could no longer be hidden. Under such conditions, the price commissar could not hold down prices, which reached a level considerably higher than that of the previous year (table 1)[9] and almost double the world prices.[10]

The 1936 harvest was somewhat better,[11] but due to shortages of other foods (especially meats), the demand for grain for food and fodder together was increased in greater proportion than the supply. Adequate price rises were "vetoed" (table 1)[9] and Goering began to enforce the law more rigorously to discourage evasion in the form of holding stocks of grain or selling illegally at prices above the fixed level, instead

[9] Vierteljahrshefte zur Statistik des Deutschen Reichs, Jahrgang 47 Heft 3, p. 143. Prices for succeeding "economic" years are given as follows: (Table 1.)

Year	*Rye*	*Wheat*	*Fodder-barley*	*Fodder-oats*
1934–35	159.3	199.9	159.7	158.6
1935–36	164.4	200.6	168.3	162.6
1936–37	164.2	201.2	168.8	163.0
1937–38	184.2	200.9	168.8	163.9
1938–39	185.4	201.5	169.6	170.4

[10] Prices in gold, RM. per 100 kilograms, from annual survey of the Frankfurter Zeitung for 1935:

	Wheat	*Rye*	*Oats*	*Barley*	*Maize*
Home	20.55	16.55	14.88	15.45	15.45
World	10.41	6.58	5.29	8.17	5.84

[11] Yields in millions of tons: Wirtschaft und Statistik 1934–39 (official) Table 2.

	Bread grains		Fodder grains		
Year	*Rye*	*Wheat*	*Barley*	*Oats*	*Spelt*
Avg. 1929–34	7.87	4.42	3.16	6.38	1.47
1934	7.61	4.53	3.21	5.45	1.43
1935	7.48	4.67	3.39	5.38	1.23
1936	7.39	4.43	3.40	5.62	1.13
1937	6.92	4.46	3.64	5.92	

of delivering supplies to the State food organization. Farmers were even urged to deliver quantities in excess of their quotas, which were required to be filled by the end of February 1937. Since lists were compiled of those who failed to surpass their quotas, the request was virtually an order.

The 1937 harvest also was disappointing, although there was considerable improvement in the yield of fodder cereals. The total yield of bread cereals was 11.2 million tons, against 11.9 millions in 1936 and a high of 14.5 in 1933.[12] Last year the crop was substantially increased,[13] but prices continued to rise and imports, especially of wheat, were high in both years. Indeed, during the whole period of the self sufficiency plan, only in 1936 was any substantial reduction in imports achieved.[14]

The shortage of grains has called forth special measures in the last two years. At the beginning of 1937 an attempt was made to increase human consumption of rye and maize, in order to alleviate the particularly noticeable shortage of wheat, less easy to eliminate by expansion of wheat production than by expansion of rye and maize production. The average price per ton of rye was raised by 20 RM., to offset the tendency for too much rye to find its way into the "pig-trough" and too little into the "kneading trough." This rise in the official price of rye cut the span between rye and wheat prices in half, and was expected to lead to substitution of rye production for wheat production.[15] In addition, the milling-grade of flour was raised to include larger percentages of bran and ash,[16] and an admixture of 7 per cent maize with

[12] Commercial History of 1937, The Economist, supplement, Feb. 12th, 1938, p. 16.

[13]

Year	*Wheat*	*Rye*	*Fodders*	*Bread Cereals*
1937	4,580	6,920	11,980	11,490
1938	5,550	8,460	11,890	13,970

Figures in thousands of tons. Commercial History of 1938, The Economist, p. 18.

[14] Imports in millions of Reichsmarks: Wirtschaft und Statistik. Table 3.

Grain	*1938*	*1937*	*1936*	*1935*	*1934*	*1933*
Wheat	149.1	156.2	6.9	14.7	60.9	71.8
Rye	9.2	23.2	2.8	15.4	3.9	19.2
Barley	46.3	5.5	2.5	12.3	37.1	14.2
Oats	14.9	5.2	1.3	13.1	3.3	1.3
Maize	146.5	178.0	9.9	18.6	23.8	15.3

[15] Halbjahrsberichte zur Wirtschaftslage, 1937–38, May, p. 32.

[16] Flours are graded by burning and measuring the percentage of ash. Halbjahrsberichte zur Wirtschaftslage, May, 1937, p. 33, note.

wheat was introduced. Finally, on and after March 1st, 1937 the 75 per cent rye-flour was eliminated, and the 80 per cent rye-flour became the lowest milling-grade. As mentioned above, in 1938 two more grades of flour were dropped. More interesting is the fact that in August, 1938, the milling percentage of rye was reduced again; it was found that the higher percentage of rye in "rye bread" had resulted in diversion of consumers from "rye bread" to "rye-wheaten" bread, so that more instead of less wheat was being consumed.[17] In 1938 the feeding of livestock with grain that could meet the lowest milling requirements was forbidden.

The program for self sufficiency in grains cannot be described as an unqualified success. With the exception of maize,[18] production of grains was lower than the 1929–34 average in every year except 1938.[19] Imports of grains are substantially higher than in 1933, and even the official prices have risen slowly throughout the period.

Livestock

Livestock markets are notoriously complicated, and Germany's is no exception.[20] Supplies depend not merely upon the price of the product, but upon relative foreign prices, tariffs, and especially the price of fodder. The two important meat products (beef and pork) are highly competitive, and the supply of each varies with the price of the other, and thus with the prices of fodders necessary to the production of the other. In the case of cattle and sheep and poultry, there is the added complication of joint production, so that the production process can be varied by months or years

[17] The Economist, August 13th, 1938, p. 322.

[18] In the nineteenth century maize was a fairly important cereal, but production had shrunk to insignificance as potato and sugar-beet production expanded. Under the Nazi program maize production has been revived with good results. Area under maize has increased seventy fold since 1932. Yields have been satisfactory, and the crop for 1938 showed an increase of 56 per cent over 1937. Cf. The Economist, April 23rd, 1938, p. 185; Wirtschaft und Statistik, p. 7, January, 1939.

[19] Not only total production, but yield per hectare has declined since 1933:

Year	*Rye*	*Wheat*	*Oats*	*Barley*
1933	19.4	24.3	21.8	21.0
1938	17.2	15.5	19.6	20.4

Figures in "double-hundredweights." From, Wirtschaft und Statistik.

[20] For a detailed discussion, see Vierteljarhrshefte zur Konjunkturforschung, 1929–30, Hefte 13 and 18.

without loss. The result is violent fluctuations of the market supplies of these products in the absence of control. On the other hand, control is clearly a task requiring an exceptional degree of foresight.

Swine production is much the most important of the livestock pursuits, and offers the best field for self sufficiency. "The domestic production of pork covers 95.99 per cent of the pork consumption of the German people, and thereby almost two thirds of the whole German meat consumption. The value of swine production, amounting to about 3 mrd. RM., comprises almost one-fourth of the agricultural gross income."[21,22] The one prerequisite to a continuation of this situation, or to the attainment of complete self sufficiency, is the maintenance of an abundant supply of fodder.

Meat consumption increased greatly after the war. In 1928 domestic production was somewhat higher than in 1913, and imports were more than twice as high as in 1913. This increase in imports was not uniform, but varied according to tariff policy. Imports of frozen meat, for example, actually declined from 1925 to 1930, because of the imposition of a quota, which was annually reduced. Tariffs were gradually raised all around, but less for meat on the hoof, which accordingly showed great fluctuations with world prices, in relation to German prices. In the case of pork, tariffs increased about 24 per cent, and net imports declined from 6.2 per cent to 2.1 per cent of the total consumption.

The first livestock product to be placed under control of the Nährstand was wool, for which regulations were drawn up in February of 1934. In the case of wool, however, complete autarky is well-nigh impossible, requiring a tenfold increase in the number of head of sheep. The real problem here has developed into one of finding substitutes for wool.

The control boards for hides and pelts, fats (and horticultural products), followed in March. At first the chief form of control, apart from fixing prices, was the rationing of primary agricultural products among manufacturers and re-

[21] All quotations on this page are from, Wirtschaftskurve der Frankfurter Zeitung, 1930, Heft 18.

[22] A report in the Economist, p. 276, Aug. 6th, 1938 states that annual consumption of home-produced beef is 1,000,000 tons; of pork, 2,300,000 tons; and of mutton, 40,000 tons.

tailers. Foreign purchases were forbidden until May 15th. In September the remaining livestock products were placed under the Nährstand.

The Reichskommissars for livestock products found themselves in difficulties almost immediately, owing to the shortage of fodders resulting from the low yield of grains in 1934. Fall rains resulted in the growth of early green feedstuffs, which helped the situation somewhat, but did not begin to overcome the scarcity. The immediate result was an increased slaughtering of livestock and increased canning of animal products. Even with this saving much of the requirement of fodder had to be met by imports; to the sorrow of the Administration. Most of the tremendous increase in grain imports in 1934 was accounted for by feeds. The food administration was compelled to relax their grip in other parts of the market as well. Prices of low-grade oleomargarines were reduced "to protect the poorer classes from the shortage of butter and better margarines." Whale oil was imported, along with feedstuffs other than grain, on a barter basis. An ordinance requiring the admixture of domestic lard in all lard sold was abolished.

In 1935 there was still a lack of feeds, and as a result slaughtering again increased, this time by 10 per cent. Rationing of butter and fats was extended to the ultimate consumer, through the use of informal rationing cards. In 1936 the fodder supply was improved, and the situation reversed itself. The number of animals slaughtered declined, and the number of head increased. The meat supply, however, was reduced. The increase in number of head was accounted for by the production of young animals, without any accompanying slaughtering of mature animals. The number of animals ready for the market had been diminished by the slaughtering of the two previous years, and since they anticipated still higher meat prices without any decline in fodder supply, the farmers were not anxious to slaughter the few full-grown beasts that they had left. A definite shortage of meat was felt in many cities. "In the centre of German interests at present stands the question of sufficient provision of meats and fats. Here, too, the 'Landwirtschaft' has done everything to restore the depressed level of animals

resulting from the duress of 1933 and 1934, and to guarantee, to the greatest possible extent, the covering of the requirement by internal production."[23]

The swine market showed the better recovery, and special measures were taken to remedy the situation of the cattle market. "In order to eliminate the difficulties in the development of our cattle business, the slaughtering of calves will be limited to 80 per cent of the deliveries effected in the period from July 1st., 1935, to June 27th., 1936, by an Ordinance of the 'Hauptvereinigung der Deutschen Viehwirtschaft,' effective October 1st., 1936, and after October 15th. the maximum price for calves and veal will be introduced into the wholesale trade."[24]

Lack of domestic fodder was not the only reason for the failure of the number of head of livestock to show significant increases up to 1936. The difficulty experienced in obtaining foreign exchange with which to buy imported fodder was a contributing factor. The result has been a tendency to shift from animal to agricultural farming.[25] Here is an example of how control introduced at one point of the economy can produce results in altogether unexpected places.[26]

Continued shortage of fodder in 1937 resulted in an increased supply of hogs for slaughtering, with a correspondingly reduced stock. According to the Institüt für Konjunkturforschung,[27] the supply of hogs for slaughtering during the crop-year 1936–37 was almost equal to that of the record year 1934–35. The same report mentions that "the final effects of the drought year 1934–35 could be seen in the smaller supply of cattle"—cattle having a longer lifecycle than hogs. The stock of cattle at the end of 1937 did nevertheless show a slight increase over 1936, approximately 2.1 per cent.[28] The increase in the stock of horses which began in 1934 continued, but this development is probably of less economic significance than the situation with regard to cattle, sheep, and swine. The most remarkable increase was

[23,24] Wirtschaftskurve der Frankfurter Zeitung, Heft 3. Teil A, p. 139.
[25] World Economic Survey, 1936–37, p. 58.
[26] For a discussion of the complications of German exchange control, see H. K. Heuser, German Method of Combined Debt Liquidation and Export Stimulation. Review of Economic Studies, 1 (3).
[27] Weekly Report, September 22nd, 1937.
[28] Wirtschaft und Statistik, 19 Jahrgang, Heft 2, p. 47.

in the number of sheep.[29] In his speech before the Reichstag in February, 1938, Hitler reported that from 1933 to 1937 the production of wool increased from 4,700 to 7,500 tons.[30]

According to a report in "Wirtschaft and Statistik,"[31] the livestock situation at the end of 1938 is influenced by two extraordinary factors: the prevalence of hoof-and-mouth disease throughout the year, and the scarcity of labor. Since swine- and cattle-raising are labor-intensive industries, continues the report, they have been particularly injured by labor scarcity and accompanying rises in agricultural wages. The stock of cattle declined 2.9 per cent during the year, and swine 1.5 per cent. These figures per se give a more favorable report than the situation warrants, since pigs for slaughter fell 4.8 per cent and the stock of young pigs fell 3.7 per cent below the 1937 level. Moreover, the decline in stocks was not in this year accompanied by any increase in slaughtering; towards the end of the year—perhaps due to better fodder conditions—slaughtering of both swine and cattle declined;[32] thus diminished stocks do not imply increased supplies of meats. The decline in supply of pigs for slaughter was foreseen by the Reichsnährstand, and in November, 1937, restrictions were imposed on the production of sausages and other pork products. The price to the farmer was raised by one to three Reichsmarks per 50 kilograms, but retail prices were not raised. Perhaps these higher prices, in conjunction with the improved fodder situation, provided sufficient inducement to raise hogs to maturity. The "Wirtschaft und Statistik" report is optimistic about the future stock of cattle, since the ratio of young cattle to milk-cows was the same as 1937 and above 1935. It is only necessary, the report continues, to remove the two causes of decline. Hoof-and-mouth disease is not inherent in Germany's policy; but the

[29] Table 4. Number of head of livestock, in thousands, Wirtschaft und Statistik.

Kind	*Dec. 1938*	*Dec. 1937*	*Dec. 1936*	*Dec. 1935*	*Dec. 1934*	*Dec. 1933*
Horses	3,442.7	3,433.8	3,410.3	3,400.	3,742.0	3,395.1
Cattle	19,900.2	20,503.6	20,088.0	18,900.	19,165.4	19.713.7
Swine	23,481.3	23,846.9	25,891.6	22,800.	23,125.1	23,878.5
Sheep	4,809.0	4,692.3	4,340.8	3,927.7	3,481.7	3,381.1
Goats	2,508.9	2,630.1	2,633.5	2,500.	2,489.5	2,584.9

[30] Quoted in The Economist, February 26th, 1938, p. 434.

[31] January, 1939, pp. 46–49.

[32] Cf. Wirtschaft und Statistik, February, 1939, p. 87.

labor scarcity seems likely to continue so long as re-armament remains an important goal.

The results of the self sufficiency program so far as livestock are concerned are more favorable than in the case of grains. The stock of horses and sheep has been increased, and the other categories are much the same as in 1933. However, prices of meats have risen;[33] a situation in which beef costs 75 cents a pound and veal $1.10 is not altogether satisfactory.[34] Moreover, imports of cattle and swine have increased enormously since 1933, while imports of horses, "various livestock" and meats have increased considerably.[35] The conclusion would seem to be that Germany is capable of self sufficiency in livestock if an abundant fodder supply is assured. Unfortunately, the program of self sufficiency in grains is incompatible with an abundant fodder supply except in years of exceptionally good harvests.

Poultry

I am devoting a seperate section to poultry, rather than including poultry in the general category of livestock, because of the difference in reaction of supply to scarcity of feedstuffs. Whereas, scarcity of feed has prevented an increase in the stock of cattle and pigs,—and likewise any decrease in the importation of cattle, swine, and meats,—the stock of poultry has increased fairly steadily[36] and egg imports have been cut to one third of their 1933 level. When fodder is scarce, then cattle, swine, and sheep are slaughtered rather than kept for future slaughter or for their products (milk and wool). Such has not been the case with poultry, except in 1937. In Germany poultry flocks represent for the

[33] Cf. e.g. Vierteljahrshefte zur Statistik des Deutschen Reichs, 47, III, p. 147.
[34] From The Economist, May 21st, p. 415, 1938.
[35] Table V. Source: Wirtschaft und Statistik. Imports in RM. thousands.

Kind	*1938*	*1937*	*1936*	*1935*	*1934*	*1933*
Cattle	36,689	40,413	39,125	20,808	11,747	7,803
Pigs	50,894	42,175	33,349	6,181	1,059	744
Horses	14,022	13,430	14,265	9,369	11,743	10,356
Various	12,427	11,458	9,588	8,798	8,782	11,936
Meat and meat products	92,193	79,847	86,283	54,876	41,577	36,082

[36] Stock of poultry, in thousands. From Wirtschaft und Statistik.

Kind	*1938*	*1937*	*1936*	*1935*	*1934*	*1933*
Poultry	97,129.8	93,260.2	97,036.3			
Hens			88,300.	86,100.	85,320.2	87,052.5

most part one sector of a mixed farming enterprise; labor involved in caring for the flocks is thus of no great significance,[37] and since poultry can be shifted to scraps if feed is scarce, there is less incentive for slaughter than in the case of other livestock. Also, scarce feeds means in the short run low meat prices, while egg prices are relatively little affected. After a period of prolonged fodder shortage such as in 1937, there is no longer an abundant supply of meats through increased slaughtering, and it may then pay to slaughter poultry. As mentioned in the foregoing, the feed situation was better in 1938, which may account for the rise in the stock of poultry again in that year.

In 1930, Germany stood fourth in ownership of hens among European countries, but seventeenth in per capita ownership. Consequently, Germany at that time imported large quantities of eggs. She was second only to Great Britain in total egg imports, and to hope for self sufficiency in this field seems particularly optimistic. Regulation of egg production and marketing was instituted early in 1934. The country was divided into fifteen districts, each under a commissar, to whom eggs were to be delivered for distribution according to local needs. Surpluses from any district were to go to the Egg Marketing Corporation in Berlin, for distribution according to the Corporation's ideas of the needs of the country. Maximum producers' prices were set by an ordinance of September, 1934.

Although the importation of eggs has been drastically reduced, from RM/ 78,821,000 in 1933 to 24,815,000 in 1937, it cannot be said that Germany is substantially more self sufficient in eggs than before the Nazi régime. Eggs were one of the first commodities to become scarce, and they are still scarce. Early in 1936 one could scarcely get eggs in Berlin at all;[38] those who succeeded in buying them at the official price would have to buy two stale eggs with each fresh egg. In February 1938, the Berlin correspondent of the Economist reports that eggs constitute the chief shortage in that city.[39] Again in August,[40] the report was that eggs were

[37] Cf. John Galbraith and John Black, Agricultural Production During Depression. Journ. Political Econ., p. 317, June, 1938.
[38] Reported by the Berlin correspondent of The Economist.
[39] Feb. 19th, p. 388.
[40] August 20th, p. 365.

scarcely obtainable. Since Germany only recently has become an egg-eating country,[41] the scarcity may not be severely felt and probably has less influence on public opinion about the self sufficiency program than other shortages.

Dairy

Although the output of dairy products is closely related to the general situation in the livestock market, the Reichsnährstand treats them separately, and we follow its example.

As Karl Brandt has pointed out,[42] the milk industry is a complex one. About two-fifths of the German supply is sold as a high-priced finished product, fluid milk. Another two-fifths is used as a lower-priced raw material for making butter, and the final fifth is used as raw material for the cheese industry or as feed for calves. Its relation to feed prices, and to meat and hide prices, further complicates control of the dairy industry. Butter prices are controlled by the fat monopoly set up in the spring of 1934. Butter prices were officially so low that farmers converted less than the usual amount of milk into butter, and the necessity for controlling milk became apparent. In September, the whole country was divided into milk marketing cartels, which allot marketing quotas. The entire milk supply of all farmers must be delivered to these cartels daily. Only the quota quantity can be sold as milk, and the remainder must be converted into butter or cheese, which is then sold at a price well below the equilibrium price.

As is well known, butter was one of the first commodities to become scarce. Today the use of rationing cards by consumers to get butter and other fats is general. Even the milk supply has not been abundant, due to the large amount of cattle-slaughtering in 1934 and 1935. The development of the stock of milk-cows in Germany can be seen in the following table:[43]—(thousands of head).

---

[41] "Since the beginning of the century, egg consumption in Germany has increased, in particular since the stabilization. Consumption per head was, approximately, 92 eggs per head in 1900, about 105 in 1913, 1920 likewise 105, then rose to 131 in 1930 and fell again to about 121 in 1931." Wirtschaftskurve der Frankfurter Zeitung, Heft 27.

[42] Recent Agrarian Policies. Social Research, p. 172, May, 1936.

[43] Wirtschaft und Statistik, p. 47, January, 1939.

Year	*Total*	*Under 3 months*	*3 months to 1 year*	*1 to 2 years*
1933	10,100.			
1934	10,094.3			
1935	9,954.4	1,451.7	2,878.5	2,867.5
1936	10,122.4	1,635.0	3,333.6	3,098.5
1937	10,224.0	1,555.4	3,370.2	3,412.8
1938	9,962.4	1,481.4	3,069.6	3,360.0

From this table it appears that not only has the self sufficiency program failed to increase the stock of milk-cows, but that there is not likely to be any increase in the immediate future.

The complete failure to attain a greater measure of self sufficiency in dairy products is indicated also by the trend in imports from 1934 to 1938.[44] Our general conclusion must be much the same as in the case of meats: given an ample supply of fodder, some measure of self sufficiency might be attained in dairy products. Since to some extent dairy farmers compete with livestock farmers for fodder, it seems unlikely that Germany could achieve Autarky in both fields.

Raw Materials

It may be worth while to survey very briefly the situation in Germany with regard to agricultural raw materials. The "Four Year Plan for Raw Materials" announced in Hitler's Nuremberg speech in September 1936 was, of course, not a purely agricultural program. It included many non-agricultural commodities, and its scope has gradually been extended. Moreover, in its initial stages at least, it wasn't an effective plan. The "gap between import needs and import possibilities" was to be closed by further development of domestic raw materials. What precisely was to be done to enhance production of these commodities was not at first made clear. Subsequently, various kinds of orders were issued. One of the first was to the effect that men's clothing must contain 15–25 per cent of artificial or regenerated wool, and that cheese was not to contain more than 20 per cent

[44] Imports in thousands of Reichsmarks, from Wirtschaft und Statistik:

Product	*1938*	*1937*	*1936*	*1935*	*1934*	*1933*
Milk	2,253	5,010	3,187	2,557	1,662	1,757
Butter	121,262	115,002	97,703	86,561	73,692	83,765
Cheese	31,414	36,724	27,601	26,787	31,436	33,716
Margerine and other table fats	6,369	—	3,522	4,055	2,553	7,660

cream. (Perhaps this latter order, which involved a deterioration of domestic cheese, explains the large increase in cheese imports in 1937.) In November 1936, it was decreed that textile fabrics designed for public service must contain up to 50 per cent of artificial fibre, and that potato parings should be used in place of firewood. In December the Hitler Youth were instructed to devote two days to the collection of beechnuts, from which a passable table oil can be obtained. Similar more or less disconnected orders have been subsequently issued. For the most part, the program has been concerned with limitation of waste and the development of substitutes.

Some raw materials, like animal oils, hides, wool, animal hair, are directly associated with livestock production, and need no further discussion. Suffice it to say that wool and hair imports for 1938 are slightly higher than in 1933, and animal oil and fat imports are above the 1934 level. In the case of cotton, which cannot be grown domestically, the solution must be in the direction of substitution. There has been talk of promoting domestic production of silk, but as yet little seems to have been done. The development of artificial silk has been much more important. Flax acreage was enlarged during 1936 from 22,300 hectares to over 44,000 hectares,[45] and production more than doubled in that year.[46] An enthusiastic bulletin estimates that for 1936–37, two-thirds of the German requirements could be met by domestic production.[45] Hemp production also has been increased. During 1936 the area under hemp increased from 3600 hectares to 5700 hectares. Despite the enlarged area—which must certainly have involved sacrifices elsewhere in the economy—imports of fibres nearly doubled from 1933 to 1937. In 1938 imports were reduced, but they are still about one-third higher than 1933.[47]

---

[45] Cf. Vierteljarhshefte zur Konjunkturforschung, pp. 164–168, Nov. 1936.

[46] Weekly Report of the German Institute for Business Research, p. 3, January 13th, 1937.

[47] Imports in RM. millions, from Wirtschaft und Statistik:

Good	*1938*	*1937*	*1936*	*1935*	*1934*	*1933*
Wool, animal hair	266.7	285.2	229.4	248.1	322.6	266.2
Fibres	99.7	112.6	81.1	86.0	69.7	65.5
Cotton	219.0	275.1	257.7	329.7	260.2	307.0

The great share of the burden of autarky in textile raw materials is being imposed upon the nation's forests. Woodside estimates that jute bags consist of 25 per cent paper yarn; cotton underwear 16 per cent celanese; uniforms, 30 per cent Wollstra, a pulp wool-substitute.[48] Rayon is being used even for carpets and men's suits. Whereas, before the Nazi régime the national forests were maintained by importation of one-third of the wood consumed, now the forests are being depleted. The time will come when Germany will have to increase her imports of wood, or strain her inventive genius to find new textile substitutes.

Not even Nazi officials pretend that Germany can really attain self sufficiency in raw materials, perhaps because to do so would not synchronize well with Germany's demand for colonies. Schacht himself has put the case very clearly.[49] Before the war, Germany was able to export finished goods to buy raw materials. Now, foreign markets are closed to her. There are, therefore, "two conditions essential to the solution of Germany's raw material problem. First, Germany must produce her raw materials on territory under her own management. Second, this colonial territory must form part of her monetary system." A report of the Institüt für Konjunkturforschung[50] maintains that if Germany is to be self sufficient in agricultural raw materials her agricultural area would have to be 45 instead of 29 million acres. Another report[51] points out that the supplementary land area needed could only be obtained through intensification of production on areas already under cultivation, since not much can be hoped for from reclamation of coast and desert areas. An increase in production of 50 per cent through intensification is clearly out of the question in the short run, so if we put these two statements together they come to the same thing as Schacht's presentation of the case.

Even the most optimistic estimates show that Germany has still to import over 50 per cent of her raw materials. Accordingly, her industry is extremely sensitive to changes in world prices of raw materials. A recession in other countries

[48] Harper's, February, 1937.
[49] Foreign Affairs, January, 1937.
[50] Weekly Report, January 13th, 1937.
[51] Halbjahrsberichte zur Wirtschaftslage, Heft 1, 1937–38, 1: 31–32.

such as that of 1937 is on the whole a boon to German self-sufficiency, since it lowers the world prices of raw materials.

Effect of Recent Territorial Acquisition

The facts and figures in the foregoing pages refer to the "Old Reich"; they do not consider the effects upon the German agrarian economy of recent territorial acquisitions. In discussing such effects, it is too much to hope that I can be up to date at the time of publication; at the moment the only additions to the Reich I can legitimately consider are Austria and Czechoslovakia.

In the agricultural sphere, Austria is more a debit than a credit. With a population equal to one-tenth that of Germany, her net imports of foods are one-eighth of Germany's; of cereals, one-half Germany's; of meat, one-half of Germany's; of fats, fish, and fruits, about one-tenth of Germany's; of eggs, a little less than one-tenth of Germany's.[52] Thus the "per capita" imports of these foodstuffs are greater in Austria than in Germany.

On the other hand, Austria is an exporter of dairy products. Since two-thirds of Austrian exports previously went to Germany, the actual increase in supplies of milk, butter, and cheese through incorporation of Austria into the Reich will not begin to eliminate the scarcity of these commodities, total Austrian exports of dairy products being only one-sixth of German imports.[53]

Austria's chief contribution to German self sufficiency will be lumber. Over one-third of Austria's superficial area is timber land, and of 1.7 million tons of timber exported in 1937, only 460 thousands went to Germany. On the other hand, it may develop that reduction of timber imports will close North European markets to German finished goods, since such trade is largely on a barter basis.

At the time of writing it is not certain what will be the

[52] These estimates are from The Economist, pp. 682, 882, March 26th, 1938 and p. 139, April 16th, 1938.

[53] Wirtschaft und Statistik gives the following figures for imports, in RM. millions, for 1938, p. 91, February, 1939.

	Butter	*Cheese*	*Meat and meat products*	*Eggs*
With Austria:	121.3	31.4	92.2	95.0
Without Austria:	121.2	32.4	94.1	95.2

precise economic relationship of Czechoslovakia as a whole to Germany. From the standpoint of agricultural self sufficiency, Sudetenland by itself is more desirable than the country as a whole. With about one-quarter of the population, Sudetenland includes 32.6 per cent of the arable area, 31.3 per cent of the cattle, 30.1 per cent of the pigs,[54] 25.4 per cent of the foodstuffs, and about 52.1 per cent of the textiles.[55] Since Czechoslovakia is a net importer of cereals, fruits and vegetables, animals and animal products, dairy products, oils and fats, and textile raw materials,[56] the fact that these proportions are somewhat greater than the proportion of the population does not mean that Sudetenland as such has exportable surpluses of these commodities. Czechoslovakia's big contribution is the same as Austria's, namely an export surplus of wood. It is safe to say, however, that inclusion of Austria and Czechoslovakia in the "Reich" will not fundamentally alter our conclusions.

Conclusion

Our survey of Germany's attempt to attain agricultural self sufficiency has shown that on the whole agricultural production has not been substantially increased and imports have not been substantially reduced.[57] If on the other hand we compare production or imports with total consumption, the official figures show that there has been a slight increase in the percentage of food and fodder consumption which comes from domestic industry (from 81 per cent in 1933 to 82 per cent in 1936[58]), a somewhat greater increase in the proportion of agricultural raw materials consumption supplied by domestic production (29 per cent in 1927, 43 per cent in 1935[59]), as light increase in the proportion of total

[54] The Economist, p. 22, Feb. 18th, 1938.
[55] The Economist, p. 55, Oct. 8th, 1938.
[56] Annuaire Statistique de la République Tchécoslovaque, pp. 137–138, 1937.
[57] Since the import figures given above are in value terms, it may be well to corroborate them with quantity figures. The following are from, Wirtschaft und Statistik, quoted in Memorandum No. 77 of the Royal Economic Society, p. 19. Metric tons: monthly average:

	1933	*1934*	*1935*	*1936*	*1937*	*1938*
Food	37	40	31	43	74	73.25
Raw materials	244	315	355	379	420	442.5

[58] Halbjahrsberichte zur Wirtschaftslage, Heft 1: 31, 1937–38.
[59] Weekly Report of the Institute for Business Research, No. 2, p. 2, 1937.

goods delivered coming from home agriculture (20 per cent in 1928, 21 per cent in 1937).[60] On the other hand, a much greater increase in the proportion of food supplied by domestic production came about from 1928 to 1933 than has occurred from 1933 on—the figure for 1928 being 70 per cent. Thus, our first conclusion is that the self sufficiency program has not brought about any significant increase in the degree of German agricultural self sufficiency.

The effect of the program on the farmer is not altogether clear. The total cash income for farm products has increased considerably (over 40 per cent) according to official figures. On the other hand, costs of production have risen. Agricultural wages have risen some 20 per cent since 1933, and even the Food Ministry admits that agriculture is now operating under diminishing returns as the result of intensification of production on previously used land and the extension of the margin of production.[61] Offsetting factors would be the reduction in interest on agricultural loans and reduction in agricultural taxes since 1932. One might guess that the net incomes of farmers had increased, but the difficulty experienced in getting farmers to deliver goods at official prices suggests that the profit spread is not very large. Up to 1935, the "price scissors" seems to have been closed considerably. The index of agricultural prices rose from January, 1933, to July, 1935, by 27.4 points, while the prices of industrial raw materials rose 4.2 points and industrial finished goods by 5.5 points. At the beginning of 1938, however, farmers were complaining that the "price scissors" had opened against them again. During 1937, the yield of farmer's sales rose by RM. 163 millions, while operating expenditures of farmers rose by RM. 335 millions; if a loose use of the terms may be permitted, these figures indicate a marginal cost double marginal revenue. Also, whereas the index of agricultural prices rose 1 per cent during 1937, the index of manufactured goods rose 5.3 per cent. These figures are official,[62] and the Reichsnährstand itself maintains that price movements are against the farmers. It is doubtful whether the rise in price to farmers during 1938 is sufficient to offset

[60] Quoted in The Economist, p. 290, Feb. 5th, 1938.
[61] The Economist, p. 111, Jan. 15th, 1938.
[62] The Economist, p. 112, 1938.

this trend, especially in view of reduced livestock supplies of that year. A safe conclusion seems to be that although farmers may be better off than in 1933, their situation is no longer improving.

The self sufficiency program has imposed considerable inconvenience, if not actual hardship, upon consumers. The scarcity of butter and lard became apparent early in 1934, and led to control of the margerine supply. Other food prices rose considerably.[63] According to the Konjunkturinstitüt,[64] only about one-half of the increased output of 1934 came on the market, because further rises in price were expected. Compulsory marketing to prevent accumulation of stocks was introduced. During 1935 the food situation became progressively worse.[65] Official prices were still low relative to costs, and farmers were still withholding supplies. More stringent measures were taken to prevent home consumption and accumulation of stocks. Consequently, other forms of evasion grew up; for example, dealers who were afraid to pay more than the official prices, would induce farmers to sell by simultaneously buying from them unmarketable rubbish at fancy prices.[66] In turn, dealers would sell scarce commodities at official prices only to customers who would buy unregulated commodities at absurdly high prices. A "Black Bourse" in food developed. Queues for rationed commodities grew longer, less patient. Public unrest became obvious. Accordingly, the Government dismissed two directors of the Reich Board of Animals and Animal Products, loudly bewailed the shortage of foreign exchange, proclaimed in one breath that "freedom is more important than food" and that the scarcity was due to "Manchester Liberalism." In

[63] At the end of 1934, the relation between domestic and world prices was as follows: (Annual Survey of the Frankfurter Zeitung, 1935. Prices in RM.

	Cattle	*Pigs*	*Butter*	*Lard*	*Eggs*	*Sugar*
Germany	82	96	260	181	11.5	44
World	23.9	28.4	121.8	66.9	4.9	9.2

[64] Quoted in The Economist, Berlin letter, July 28th, 1934.

[65] The London Economist reports in its issue of Sept. 14th (p. 514) that the complete lack of certain foodstuffs was causing discontent among Berlin workers. Three weeks later (p. 656) the Berlin correspondent writes: "The shortage of foodstuffs last week and early this week became serious. It was impossible to purchase butter, lard, margerine, pork, or bacon. Food queues outside retail shops were seen for the first time."

[66] The Economist, Sept. 28th, 1935, Berlin letter.

October, the Government entered into barter agreements with Denmark, which temporarily relieved the situation.

In 1936, when conditions did not improve and the rations card system had to be extended, the official explanation became more realistic. The shortage was attributed to rearmament, and was therefore a "sacrifice for freedom." Goebbels made his famous speech at Berlin (Jan. 17) in which he said "We can well do without butter, but not without guns, because butter would not help us if we were to be attacked one day." Nevertheless, some scapegoat became necessary, so the Government turned upon the German "kulaks." Thus did the simple, vigorous, and loyal "yeomen" of 1933, the backbone of the German economy, become the "saboteurs of nourishment" of 1936! They are guilty of treason, and so must be severely punished! There was, of course, some justice in the accusation. The profits of evading state-imposed restrictions had become too high for such evasion to be absent.

Throughout the spring and summer of 1936 the food shortage was intensified. The population was advised to eat more fish. They were urged to give up consumption of the scarce commodities. The "famine Sundays" were instituted. In December, the pressure brought to bear upon the peasants was increased by the declaration that cases under the "Law vs. Economic Sabotage" would be tried by the "People's Courts," a definitely Nazi organization. Goering made a speech saying that he had lost many pounds, why couldn't all loyal Germans do likewise? The veto on price rises became ineffective. One cannot easily enforce a law which the whole population wants to break.

Since 1936 the situation does not seem to have changed significantly. Scarcities still exist, but are confined to much the same commodities as in 1935. Vegetables, fruit, eggs, and butter are difficult to obtain. Housewives may wait a long time in line, and then be asked to buy things they don't want in addition to the things they do want. This device has now been declared illegal, but it is clearly not a practice easy to check.[67]

The Konjunkturinstitüt has steadfastly and officially

[67] See, e.g., The Economist, August 20th, 1938, p. 365.

maintained that failure of the self sufficiency program and shortage of food are figments of the fertile imaginations of foreign press correspondents. For the purposes of direct argument in its English publication,[68] the Institute estimates the rise in percentage of home-produced foodstuffs from 1934 to 1936 somewhat higher than in its German publication;[69] 80 to 84 instead of 80 to 82. The "grotesque exaggeration of the scarcity which sometimes arises in the case of some agricultural products" results from the failure of foreign critics to understand that "this scarcity is due to the desire of the German Government to maintain fixed maximum prices in the interest of the lower classes" plus "foreign exchange difficulties."[70] I confess that I too fail to understand how low prices help the lower classes if they cannot buy at those prices; and surely the "foreign exchange difficulties" are in part the result of the self sufficiency program in a world in which countries refuse to buy from those who are not customers.

Per capita consumption, according to official figures, has increased not merely in money terms but also in quantity terms[71] and even in terms of calories.[72] While it is admitted that a still higher standard of living could have been attained if it had not been necessary to rearm, it is pointed out that the same is true of other countries.[73] In any case, it is argued,[74] real income has increased more than in the previous upswing.

Prof. Lederer has estimated[75] that the German standard of

[68] Weekly Report, Feb. 10th, 1937, p. 4. Dr. Wagemann is replying to The Banker.

[69] Halbjahrsberichte zur Wirtschaftslage, May, 1937, p. 30.

[70] Weekly Report, Feb. 10th, 1937, Supplement, p. 1.

[71] The following figures are from, Vierteljahrshefte zur Statistik des Deutschen Reichs, 47 Jahrgang, Heft 4, January, 1939, p. 94 ff. Thousands of tons.

Year	*Milk*†	*Butter*	*Eggs*	*Rye-flour*	*Wheat-flour*	*Poultry*	*Vegetables*	*Fruit*	*Meat*‡
1933	119	7.8	121	53.7	45.3	1.55	49.2	62.8	45.1
1937	123	8.9	124	55.0	55.7	1.46	50.3	73.4	47 (1936)

† Includes goats milk.

‡ From Weekly Report, Feb. 10th, 1937, p. 3.

[72] Weekly Report, Feb. 10th, Supplement, p. 3: Index, 1928 as 100: 1933, 93.1: 1936, 97.3.

[73] Weekly Report, Feb. 24th, 1937, p. 1.

[74] Weekly Report, Feb. 24th, 1937, p. 3.

[75] Social Research, p. 74, February, 1938. See also The Banker, p. 143, February, 1937. This latter article was bitterly attacked by Dr. Wagemann of the Konjunkturinstitüt in the Weekly Reports for 1937.

living is 20 per cent lower than in 1929. This estimate is not incompatible with official figures of volume of consumption, but the official figures for "calory consumption" show a rise even over 1929. The cost of living index shows a rise of only 6 per cent since 1933, and the index of production of consumption goods rose from 91.8 in June 1933 to 112.0 in March 1938.[76] Such estimates take no account of deterioration in quality, discrepancies between official and actual prices, or inability to get certain commodities at all at official prices. Also, it is difficult to attach meaning to a consumption index which includes textiles for army uniforms and other items of military equipment. The International Labour Office estimates[77] that industrial money wage rates have not risen, while real wage rates have declined since 1933. The fact that payrolls have increased by 54 per cent from 1932 to 1937 and retail turnover has increased only 32 per cent is another indication that real wage rates have fallen.[78] Foodstuffs constituted 8 per cent of national income in 1928, 7 per cent in 1932, and only 4 per cent in 1936; but national income has of course risen substantially.

The one definite conclusion that emerges is that real income per employee is lower than in 1932. Even calculated from official German figures,[79] with incomes estimated in 1926 prices, real income per employee shows a decline from RM. 2,685.2 in 1932 to RM. 1,884.4 in 1936. If in a less rigorously controlled economy "full employment" were achieved by some other method than by "unproductive" government expenditures, it is highly unlikely that real income per employee would not be higher than in mid-depression. It is not so certain that such "full employment" can be attained without public expenditures and rigorous control.

---

[76] Balogh, The National Economy of Germany, Economic Journal, p. 463, Sept., 1938.

[77] International Labour Review, p. 547, October, 1938. Index, 1929 as 100:

Year	*Money Wage Rates*	*Real Wage Rates*	*Weekly Earnings*
1933	79	104	68
1937 (Dec.)	79	98	102

[78] I owe these figures to an unpublished manuscript of Dr. Fürth of Harvard, who obtained them from, Statistik des In-und Auslands.

[79] Weekly Report, pp. 2 and 3, February 24th, 1937, Supplement.

EVOLUTION OF A PLAN FOR INTRA-ASSOCIATION SHIFTING OF THE CAPITAL OBLIGATIONS AMONG MEMBERS[1]

H. E. Erdman and Weston W. Taylor
University of California

THE material presented in this paper represents a case study of a new feature recently developed in the financial structure of one of California's more successful cooperatives of the non-stock type, the Poultry Producers of Central California. This feature constitutes a scheme for voluntarily redistributing the financial contributions of members in accordance with variations in their financial needs without disturbing voting rights. It is superimposed on a successful revolving finance structure.

This Association was incorporated in 1916 on the capital-stock plan, with $10.00 shares. It began business in January 1917 with a paid-up capital of about $10,000, of which about $5,000 had been expended in organization. The marketing agreement provided that in addition to deductions for expenses there be a one-cent deduction from the returns on each dozen eggs handled for the purchase of additional stock. By the end of 1923, when the change was made from the capital-stock plan to the non-stock plan, nearly $450,000 had been so deducted.

Even before the end of 1923 it had become clear that the membership turnover was gradually undermining the cooperative character of the Association. There was no plan for retiring the shares of such members as ceased to produce eggs. These persons seldom retained sufficient interest to keep the Association informed of address changes; hence it was becoming burdensome to keep track of them in order to send notices of meetings and the small annual dividend checks. More important was the prospect of a continued increase of inactive names on the list of stockholders.

Therefore it was decided late in 1923 to reorganize on a non-stock basis with a revolving finance plan under which the deductions and repayments would be continued perma-

[1] Giannini Foundation Paper No. 79.

nently. The plan was designed not only to repay, in the course of a few years, the investments of any members who ceased to be producers, but to readjust the investments of producers who decreased or enlarged their flocks.

When, in 1926, it was decided by an overwhelming membership vote to establish a feed department, a new revolving fund was set up to finance the added service. This "feed finance fund" differed from the original "advance fund" in the source of the funds. Whereas the source of the advance fund was the one-cent deductions from proceeds of egg sales, the new feed finance fund was to be built up by retaining the sums which would ordinarily have been paid to producers in the form of patronage dividends on the feed business. When the desired capital had been raised the oldest dividend contributions would be paid back, or "revolved" each year as new accumulations brought the fund beyond the total needed by the Association for the operation of the feed department.

Proportionate Investment Theory Questioned

One of the simplest ways of raising capital in a cooperative is the method of withholding a part of the receipts from the sale of its members' products. The plan particularly fits the theory that members should contribute capital in proportion to the use they make of an association's facilities. The experience of this and other associations has led the writers to doubt the soundness of a rigid policy of requiring ownership in proportion to the use of facilities. Such a policy overlooks the fundamental point that cooperative-mindedness, or willingness to function cooperatively, is not found in any group of men in the same proportions as is the ability to contribute to an organization's capital.

Students of farm problems are well aware of the fact that shortage of capital on the part of farmers arises out of a variety of situations. A rough classification might be as follows:

(1) There are young men who are just getting started and whose credit must be stretched to the limit to get a farm or even the equipment necessary to operate a rented farm of suitable size to permit them to make a living.

(2) There are men whose capital has been depleted by the ravages of plant or animal disease, the vicissitudes of weather, or abrupt changes in economic conditions.

(3) There are those upon whom there has come a sudden demand for additional funds to meet personal needs or to meet the needs of ventures outside the farm business.

It is common knowledge that men will be found in all three of these classes who believe an association for cooperative marketing can be of value to them and who would like to join but who, because they are required to contribute capital which they need badly in their farm operations or otherwise, would not join.[2]

The method of raising funds by regular deductions from proceeds looks simple and is often thought of as a painless process. The deductions, however, are none the less real and may reach substantial amounts if, as in this instance, an association takes over any considerable part of the marketing process and the facilities required for the purpose. In this present instance the total assets controlled by the Association by the end of the third year of operation amounted to $202.00 per member. With the expansion of the Association's activities to include a feed business in 1926, the assets climbed to $683.00 per member. With the establishment of additional branches to serve as retail outlets for feed and collecting stations for eggs, the total assets per member had reached $854.00 by the end of 1937.

A growing concern always has outstanding liabilities which in part offset the assets constituting its market facilities. Thus in 1937, while the total assets were $854.00 per member, the net worth was but $524.00 a member, or 61.3 per cent of total assets, the remainder representing commercial loans, credits, and amounts owed on branch houses et cetera.

An effective way of indicating relative changes in net worth from time to time is to state it as the amount per case of eggs handled during a year. At the end of 1917 the investment per case handled during the year was 35 cents; by the end of 1926 it was 81 cents; and by the end of 1937 it amounted to $2.45. The latter figure represents the amount

[2] Space forbids any marginal analysis of "credit needs," whether with or without any assumptions of specific benefits arising out of membership.

producers had to contribute to the capital fund in order to control the assets making up a marketing system which at that time was valued at $3.99 per case handled annually.

Since in two decades the membership has grown to over 5,000, one may assume that poultrymen felt that it paid them to take over the additional marketing functions with their accompanying capital requirements. It must not be forgotten, however, that the $524.00 of net worth per member at the end of 1937 represents an investment by the average producer over and above that involved in owning and operating his ranch.

The certificates issued to producers to represent their contributions to each of the two revolving funds have regularly carried 6 per cent interest. This has made them a desirable investment, and almost from the beginning it became common practice for certain producers at times to turn these certificates over to feed dealers in payment of feed bills. There was no serious harm in this since the certificates have no due dates and do not carry voting or membership rights, the latter being represented by the non-transferable $10-memberships established under the non-stock plan of organization.[3]

A New Plan Emerges

Although the revolving fund certificates carried 6 per cent interest, they were frequently discounted by purchasers at from 12 to 20 per cent.[4] In order to avoid thus penalizing needy members, the Association arranged in the summer of 1928 to purchase up to $20,000 worth of certificates at any one time of such producers as needed funds and to seek to resell them to investors. The Association was to hold the certificates in case the secretary was unable to find purchasers.[5] The certificates were at first purchased at prices currently offered by feed dealers and others, but the Association soon put into effect a discount schedule designed to limit the annual return on certificates to 10 per cent.

In August of 1930 arrangements were made to have the

[3] Some students of cooperative marketing emphasize the point that a person will be more loyal to his association if he has a "financial stake" in it.

[4] Sholz, Paul G. Nulaid News, p. 2, February, 1937.

[5] Minutes of Board of Directors, June 26, 1928.

Producers Company, Ltd.,[6] a subsidiary of the Poultry Producers of Central California, buy the certificates. This organization at first authorized the use of a fund of $50,000 for the purchase of advance-fund and feed-fund certificates. Later on, increased amounts were authorized from time to time.

The Producers Company, Ltd., then developed a plan of issuing "investment fund certificates" for sale to investors. These new certificates were supported by an equivalent amount of revolving fund certificates. The investment fund certificates were first issued in October 1930 in units of $10, paying interest to investors at a rate to be determined by earnings, but not to be less than 6 per cent nor more than 12 per cent. The earnings were to be derived solely from the interest received on the revolving fund certificates held by the investment fund and from such discounts as were taken on certificates purchased.

The prices which were to be paid for revolving fund certificates under the new arrangement were at first held in line with the discount schedule as earlier set up, which placed the prices at various stages of likely redemption[7] on a basis to yield about 10 per cent. As the investment fund became better known and both sellers and purchasers began to use it more generally, it was found that there were more offers to invest than to sell; hence in 1933 the discount rate was changed to an 8 per cent yield basis, estimated on a four-year-term retirement of investment-fund certificates. Later on the rate was still further decreased until in 1935 all certificate purchases were placed on the basis of par value plus accrued interest.[8]

The cooperative handling of certificates through the investment fund managed by the Producers Company, Ltd., was carried on without cost to buyer or seller, except that

---

[6] This had originally been incorporated in 1920 as the Poultry Producers Packing and Warehousing Association, Inc., with a capitalization of $10,000, as a subsidiary to handle certain items which the Association was not in a position to handle. At the time the name was changed to Poultry Producers, Inc., the capitalization was increased to $100,000.

[7] The term "maturity" cannot be used here because there was no maturity date. Instead, certificates were retired periodically as the contributions to the two funds built the totals to points in excess of capital requirements.

[8] Minutes of Board of Directors, February 12, 1935.

during the early years a discount was sustained by the seller. At present the fractional months interest on certificates turned in by producers during any month covers any additional expenses incurred.

During the early stages of the experiment, the investment-fund certificates were offered to friends of the association, to officers, to employees, and to members. Gradually, as the plan became better known, the demand for investment-fund certificates among producers with surplus funds to invest has grown. Sales are now restricted to members of the association. There was not a great deal of advertising of this additional service, except as it was announced from time to time through the Weekly News Letter.[9]

Although outside investors do not now have access to this particular investment market, such investors do occasionally purchase certificates directly from members.

Operation of the Plan

Table 1 shows the amount of revolving fund certificates purchased by the Association directly or through its subsidiary during the years indicated and the percentage which such purchases were of the total outstanding certificates.

TABLE 1. AMOUNTS OF REVOLVING FUNDS OUTSTANDING AND PURCHASES FROM MEMBERS BY THE ASSOCIATION 1929–1937

Year	Total revolving funds outstanding (year end)	Amount of revolving fund certificates purchased	Total purchases are of total revolving funds outstanding
	1	2	3
	dollars	*dollars*	*percentage*
1929	1,562,000	106,708	6.83
1930	1,890,870	230,701	12.20
1931	2,002,070	251,350	12.55
1932	1,955,040	349,236	17.86
1933	1,840,800	355,600	19.31
1934	1,868,280	279,230	14.95
1935	1,983,110	279,320	14.08
1936	2,357,680	298,400	12.66
1937	2,410,670	403,160	16.72

[9] For example, the Weekly News Letter of May 21, 1934, advised members to hold their certificates, if possible, but if forced to sell to take advantage of the association's arrangement.

These purchases rose to 19.31 per cent of outstanding certificates for the year 1933, declined to 12.66 per cent in 1936, and rose sharply again in 1937 to 16.72 per cent. These percentages represent the proportions of total capital contributions of producers which were currently shifted from original contributors to voluntary investors.

It is, of course, rather common at times for producers to use their certificates as collateral for loans in banks. It is said that interest charges on such loans are about 6 per cent, and that loans may range anywhere from 75 to 100 per cent of the par value of certificates. Such operations are obviously not included in table 1.

The Production Credit Corporation at the present time will loan on certificates to the extent of 85 per cent of the par value, less 5 per cent of each $100 payable in stock of the Production Credit Corporation. This is equivalent to a net loan of 80 per cent of the par value with interest at 5 per cent. With this arrangement some members are able to hold certificates and more than cover the bank charges from the 6 per cent interest paid by the cooperative association on its investment certificates.

The most recent change in the operation of the "investment fund" plan is the provision which now obtains respecting retirement of the certificates. Prior to 1937, the "investment-fund certificates" were retired periodically as the particular lots of revolving-fund certificates on which they were based were retired. Under the present plan, when an investor waives his retirement privilege, his investment continues indefinitely, backed, however, by a changing certificate basis as old certificates are canceled and new ones issued.

Table 2 gives the results of the operation of the plan as applied to all of the certificates issued during the four years (1931–1934). The amounts in column 1 represent the amounts in the revolving fund issued during each of the four years. The items in column 2 represent the amounts purchased during the several years prior to retirement of the fund issued during the years indicated. Column 3 presents the same data as a percentage of the total amount. Thus, of the total revolving fund certificates issued during 1931, 46.24

per cent were purchased of holders before retirement. Similarly, of the revolving fund certificates issued during 1932, 49.77 per cent were purchased before retirement.

TABLE 2. REVOLVING FUNDS ISSUED DURING FOUR YEARS AND AMOUNTS OF THESE PURCHASED BEFORE RETIREMENT

Year	Revolving fund certificates issued	Purchased before retirement	Purchased before retirement
	1	2	3
	dollars	*dollars*	*percentage*
1931	840,380	388,590	46.24
1932	747,700	372,120	49.77
1933	536,040	263,480	49.15
1934	580,030	281,000	48.45

As previously stated, the certificates in the two revolving funds issued by the Association have carried a 6 per cent interest rate throughout its history. To what extent this has facilitated the development of the plan above described is problematical. At the present time many associations do not provide regularly for the payment of interest, or leave this to the decision of the directors from time to time—a wise policy undoubtedly, but one which may make it more difficult to sell the certificates, since the time of maturity is ordinarily also uncertain, so that an ordinary discount would not take care of the problem.

The writers are inclined to feel that the plan developed by the Poultry Producers of Central California may well be considered by other associations requiring considerable amounts of capital. The particular plan is not as important as is a recognition in cooperative structures of the principle that cooperative-mindedness is not found in any group of men in the same proportions as is ability to contribute to an association's capital.

With the general adoption of the revolving finance plan, under which investment rights are separated from membership and voting rights so that the purchaser of investment fund certificates obtains no voting rights, the new method of financing may prove to be an element of strength in cooperative marketing.

STATUS OF AGRICULTURAL TRADE UNIONS IN HOLLAND

SIDNEY C. SUFRIN[1]
Ohio State University

THE agricultural unions of Holland are largely organized on an industrial basis. All agricultural workers are eligible for membership in the national unions. These national unions, of which there are no less than six, are differentiated on religious and political grounds. The number of wage earners in agriculture is approximately 400,000 of which nearly a fifth, or 75,000 are members of trade unions.

TABLE 1. AGRICULTURAL UNION MEMBERSHIP 1929–1938

Year	Nederlandsche Bond	Christelijke Bond	Roomsch Katholieke Bond	Others	Total
1929	8,387	6,309	8,235	957	23,888
1930	15,125	8,672	10,246	1,219	35,262
1931	16,044	9,903	11,088	1,364	38,399
1932	23,227	16,870	15,533	2,165	57,795
1933	32,611	25,052	19,225	3,269	80,157
1934	34,122	27,170	20,207	3,194	84,693
1935	32,235	26,898	19,042	2,899	81,074
1936	28,626	25,267	17,741	2,761	74,395
1937	28,943	25,610	17,339	2,757	74,649
1938	29,464	24,739	17,397	2,764	74,364

Note: Data from the Central Bureau v/d Statistiek, in a letter from Dr. Methorst, Director.

Every farm area in Holland, with a few minor exceptions in Friesland and Groningen, has at least two, and usually three agricultural unions, each offering similar benefits.

Of the six agricultural unions, only three are of real national importance. They are the Socialist (Nederlandsche Bond), Protestant (Christelijke Bond), and Catholic (Roomsch Katholieke Bond) unions. The three minor unions whose combined membership is approximately 2700, represent mainly the dissident element from the larger unions. The Christian National Association of Persons Employed in Agriculture, et cetera (Protestant), is almost entirely limited

[1] The writer wishes to acknowledge the help of his wife who acted as interpreter and translator.

to Menaldum in Friesland, and represents a defection from the Nederlandsche Bond. The Netherlands Federated Union is an Anarcho-Syndicalist union. Its impotence is seen in its 520 members being scattered over 33 locals. The General Netherlands Federation is supposedly a Communist union, although officially it claims to be "neutral."

In the economic sphere of making agreements, in strikes and with employers, the national unions and their locals, more or less respect the existence of each other, and frequently cooperate in matters of wage arbitration.

The ability of several unions to exist side by side without much conflict, probably is because of the social structure of Holland. The political and religious stratification is relatively stable. The unions have discovered that, in the main, attempting to win workers from other (competing) unions is a most difficult task. Thus wherever possible, they tend to cooperate rather than compete. Such inter-union tactics do not obtain when "splinter" unions are formed by breaking of from one of the larger unions. It follows then, that all the forces of the larger union are used to regain or crush the dissident local or group of locals.

In general structure, the agricultural unions are composed of locals which are associated into national unions, the nationals in turn being organized into large federations.

Similar conditions exist in the United States—the local labor union is the primary agency of collective bargaining. Holland is so small, however, and the relationships of local to national unions so close, that the strength and prestige of the national unions are frequently felt in the negotiating of labor contracts. These contracts touch on matters of wages, hours, perquisites, and holidays.

Superficially the Dutch experience of trade unions in politics is similar to that of the United States. That is, officially, the trade union eschews political affiliation. In annual reports, and in some propaganda material, all the Dutch agricultural unions speak of themselves as politically "independent." A closer investigation, however, indicates a close alignment of trade unions with political parties; for example, the Nederlandsche Bond is associated with the Nederlandsche Vak Vereeniging, which is a federation of

unions like the A.F. of L. or the C.I.O., the N.V.V. in turn, actively and openly supports the activities of the Social Democratic Party. This cooperation is so close that the secretary of the Nederlandsche Bond van Land-, Tuin and Zuivel Bedrijven, also is a leading member of the Second Chamber, elected on a Socialist ticket. Similarly the Roomsch Katholieke Bond openly supports members of the Roman Catholic party for election. The same is true for the Christelijke Bond which supports members of the Liberal Party and Christian coalition.

In spite of alignment with specific political parties, the agricultural unions and their political representatives act in unison to secure the passage of social and labor legislation. On this they frequently cross party lines. This political cooperation exists in spite of the different attitudes of the three major unions. In a free translation of the words of the Secretary of the Roman Catholic Union, "Direct betterment (for the working class) can be secured by inter-union cooperation in spite of different religious and social attitudes." Similarly the Nederlandsche Bond believes that "Although the Christelijke and Roomsch Katholieke Unions stay within the house of capitalism," immediate gains for labor can be secured by inter-union cooperation. The apparent stability of the major national agricultural unions has not solved the organizational problems as the ratio of unionized to potential membership shows. On farms utilizing a marked intensity of cultivation and "gang" methods of work, trade union organization has been easier to accomplish than on the very small farms employing one or two workers.

Farms which employ relatively great quantities of labor with respect to land and on those using more extensive methods of cultivation, three types of labor are employed: (1) Permanently employed laborers on yearly contracts, (2) Semi-permanently employed laborers on contracts which vary from a week to several months, concentrated at either end of the growing season, (3) Casual workers employed on a daily basis without any particular tenure.

As in America, workers on one- and two-man farms are not easy to unionize. Not only are the relations between employer and employee close, since both usually work side

by side, but frequently the employee is of the employer's family. Obviously such close bonds do not obtain on the farms employing several workers and it is here that the unions recruit their membership. The length or type of the labor contract is not the important factor in determining the worker's willingness to join a union. The existence of factory or gang methods of work with its attendant feeling of class or group unity is a deciding factor in unionization. Like in America, workers on "factory" farms, even though the units are small, are more likely to be organized than on one- or two-man farms. However, a slight trade union organization on such farms, entirely absent in America, is not unknown in Holland.

While there is reason to believe that the agricultural unions have succeeded in raising wages, it is difficult to know the amount of the labor income. Permanently employed workers, especially, receive perquisites in the form of housing, forage for cattle, garden produce and the use of horses and carts. These workers earn between 14 and 18 florins a week in the form of cash payments, in addition to the perquisites. Temporary workers are employed on an hourly basis and receive between 23 and 35 Dutch cents per hour or about 12 guilders a week. Frequently this amount is in addition to such perquisites as food and occasionally lodging.

Workers of less than 20 years old receive a percentage of the rate paid to permanent employees. At 13 years of age this rate is 30 per cent of the basic male rate and increases by 10 per cent per year so that at 20 a worker is considered a full grown man. Women are employed during weeding and harvesting seasons, and usually receive between three-fifths to two-thirds of the wage paid to men. Girls of 13 years usually receive 50 per cent of the adult women's wage, a ten per cent accretion occurring each year so that 18 year old girls are considered as full grown. These rates obtain in the many collective agreements which exist in agriculture.[1a] The rates of the many collective agreements tend to set the rate for all agricultural workers, unionized or not.

No laws exist in Holland for the regulation of agricultural wages and hours. Through trade union bargaining, however,

[1a] J. Hilgenga, *op. cit.*, pp. 51–55.

agricultural labor works 7–8 hours in the winter and 9–10 hours during the other three seasons. Harvest hours are 55–56 per week.

Legal Position of Agricultural Labor

One great difference between the position of agricultural labor in Holland and in the United States is the legal and political acceptance of wage workers in agriculture, as a special interest group demanding governmental protection. In America, such considerations have been reserved for farm owners and operators.

One of the first great post war benefits to agricultural labor in the Netherlands was the passage, in 1922, of the Agricultural and Horticultural Accidents Act. Under this enactment, 80 per cent of a farm worker's wage is paid to him during the first six weeks of incapacity if caused by an accident. For subsequent weeks, 70 per cent is paid. In 1929, agricultural workers were made subject to the Sickness Act which assures a worker 80 per cent of his wage during the entire period of sickness. The first Act provides for contributions entirely by employers. Under the provisions of the second Act contributions are made by the employer, who may deduct one-half of the tax from the worker's wages. The agricultural workers, as a class, are covered by the old age Pension Law. The entire contributions are made by the employers.

Since 1872, trade unions have had the legal right to make contracts with individual employers fixing wages, hours and conditions of employment. Since 1923, the State has fostered voluntary arbitration of industrial disputes. In 1934 the federal government, in the face of an unprecedented crisis, practically forced arbitration on employers through the Emergency Organization Decree.

With specific reference to agriculture, the Decree provides that employers, either as individuals or in associations must discuss with the trade unions matters of wages and hours. If the employers refuse to meet with the trade union, or if an agreement cannot be reached the union may apply to the Ministry of Agriculture and Fisheries for arbitration. An arbitrator is then usually appointed, whose findings apply for one year.

Table 2 illustrates the success of the arbitration policy. Not only has the number of strikes sharply diminished since 1934, but their average duration has decreased. The strike

TABLE 2. STRIKES IN AGRICULTURE 1929–37

Date	No. of strikes	No. of strikers	Total of days lost	Average no. of days lost per striker
1929	4	5,680	541,200	95 plus
1930	6	290	25,700	88 plus
1931	14	3,430	57,700	16 plus
1932	14	890	9,000	10 plus
1933	14	870	20,300	23 plus
1934	5	350	1,200	3 plus
1935	0	0	0	0
1936	1	3,000	4,500	1 plus
1937	0	0	0	0

Note: Computed from Centraal Bureau v/d Statistiek, *op. cit.*

center remains in Friesland and Groningen, the area of the most militant unions.

The Decree of 1934, in addition to its arbitration provisions, also permits collective agreements to be legally made between a union and an entire industry or section of an industry.

TABLE 3. COLLECTIVE AGREEMENTS IN AGRICULTURE AND HORTICULTURE 1917–1937

Year	No. of agreements	No. of employers covered	No. of employees covered
1917	36	948	3,758
1922	66	3,810	15,185
1927	83	4,183	19,689
1929	124	5,182	24,024
1930	158	6,233	31,342
1931	150	6,226	31,916
1932	151	6,693	31,558
1933	174	7,837	35,773
1934	201	9,667	44,513
1935	254	10,987	43,122
1936*	326	20,677	65,616
1937	354	24,755	78,346

* In addition there were in 1936 about 4,000 farmers and market gardeners and about 13,000 workers covered by wage regulations issued in virtue of arbitration awards under the Agricultural Emergency Act.

Note: Ned. Bond—Annual report, *op. cit.*, pp. 14, supplemented by data from Centraal Bureau v/d Statistiek, *op. cit.*

The increase in agreements after 1934 does not show a sudden spurt, although the rate of growth has increased over the period before 1934. It is as if steady growth and increasing importance of collective agreements, rather than the "emergency" in 1934, forced the government to grant to the economic and legal fact a political sanction.

Hand in hand with the legal recognition and governmental support to collective agreements in agriculture, attempts were made to alleviate unemployment. The number of farm workers without work in the winter of 1935 has been placed between 120,000 and 160,000. Even during the summer months of 1936, unemployment for farm workers was about 75,000.

Since 1919 Holland has had an unemployment insurance program. This plan provides for state subsidy to trade union unemployment funds. However, owing to the severity of the depression and the incomplete coverage of unemployed by unions, these funds have not been adequate.

TABLE 4. TRADE UNION UNEMPLOYMENT INSURANCE EXPENDITURES*
(In millions of florins)

Year	Expended through agr. union	Expended through all unions	Percentage expended by agr. unions
1929	0.76	8.1	9.4
1930	0.63	11.6	5.4
1931	1.62	24.5	6.6
1932	3.42	28.7	11.9
1933	4.46	27.1	16.4
1934	2.98	21.4	13.9
1935	3.15	19.3	16.3
1936	2.85	17.7	16.1
1937 estim.	2.77	14.4	19.2

* Data include governmental subsidies. Fully one-half to two-thirds of the trade union unemployment insurance expenditures are derived from the government.
Note: Computed from figures given by Centraal Bureau v/d Statistiek, *op. cit.*

Table 4 shows the growing importance of agricultural trade unions in the whole (declining) union unemployment relief machinery. The severity of the depression has thrown more and more of the relief burden directly on government agencies. Not only has unemployment grown, but the membership of the unions has declined, thus reducing the income of the unions, and their unemployment coverage. The task

of supporting the unemployed is largely the problem of local government. The government has embarked on a program of drainage, canal clearance and water control. This program has given jobs at less than current wages, to between 40,000 and 50,000 workers, the vast majority (almost 75 per cent) of whom are farm workers.

In the spring of 1938, the government successfully attempted to apply an extra-legal solution to the unemployment problem of agricultural workers. Apparently by agreement with the German government, the Dutch government permitted jobs in Germany to be listed in the *Arbeidsbeurs* (state employment agencies). Dutch relief agencies have been instructed to withhold relief from all able unemployed farm workers who refuse to accept the German jobs. The exact number of men forced to work in Germany is not available. The seasonal decline in unemployment in agriculture, however, was 19.5 per cent from February to March 1938. Past experience shows the decline in agricultural unemployment to have been about 7 per cent. Late in the summer of 1938, it was reported that this enforced migration had ceased, probably because of Germany's ability to secure cheaper Italian labor.[2]

Conclusion

From the foregoing discussion certain generalizations may be drawn with respect to agricultural trade unions in Holland. They have grown slowly, but in a mileu accustomed to trade unions. Therefore, their acceptance by employers, government and workers has been easier than that of their American prototypes.

The formation of the Dutch agricultural unions has not been hindered by any racial prejudices or differences. On the other hand, religious and political barriers do exist and have divided the union movement. The arbitrary nature of the divisions is apparent when it is recognized that the economic and usually the political programs of the several unions coincide sufficiently to permit inter-union cooperation. Only infrequently do the unions conflict on any local economic

[2] This was reported in the mimeographed news bulletin of the International Transport Workers Federation of August 20.

issue, as in an arbitration proceeding or strike. The great differences are in the realm of broad political orientation whose bearing on wages and hours usually is not immediate. When a political problem of direct interest to agricultural labor arises, the politicians representing trade union constituencies and supported directly by the trade unions, act without reference to party lines.

Small family farms or those employing one or two workers, on which there is a close bond of interest between the owner and the hired worker are not conducive to trade union organization. The strength of the farm worker's union lies on the farms using a marked division of labor, and gang methods of cultivation. In this the Dutch experience coincides with the American, although the exploitation of huge tracts of land by gangs of workers does not exist in Holland. The scarcity of land and its high price make large scale farming after the American plan too expensive.

From the American point of view, an interesting aspect of Dutch agricultural unions is their integration in the government program of unemployment insurance, and the inclusion of all agricultural workers in the general program of social insurance. This latter inclusion arises, in part at least, because of the political strength of the farm workers through their several unions. Equally interesting is the governmental recognition of the unions, including the agricultural, as sole agencies of collective bargaining. The Dutch agricultural unions since 1934 have the right to compel employers either to bargain with them in the matters of wages and hours or to arbitrate differences. These legal rights imply the complete acceptance by the government of the agricultural unions as integral parts of the machinery of economic control.

ECONOMIC ASPECTS OF HYBRID CORN[1]

A. A. Dowell and O. B. Jesness
University of Minnesota

THE development and rapid adoption of hybrid corn seems likely to become one of the most important changes in production technique relating to a farm crop in modern times. Corn employs more acres than any other farm crop in the United States consequently anything which affects that crop will have widespread ramifications. It is the purpose of this paper to direct consideration to some of the economic consequences which may flow from this development.

Extensive use of hybrid corn is of such recent date that census data or detailed estimates with regard to it are not yet available. Scientists engaged in crop breeding work in the various states probably are in closer touch with the situation than anyone else. Requests for information consequently were directed to workers in this field in the twelve corn-belt states.[2] The replies indicate that hybrid corn was first used by a few commercial corn growers in Illinois, Ohio, Indiana and Iowa between 1923 and 1926. By 1937, it was being produced commercially in all of the corn-belt states, although there were wide differences in the rate of increase and the proportion of the land planted to hybrid seed in the different states.

Indications are that the most rapid increase in acreage of hybrid corn has occurred in Indiana, Illinois and Iowa. In the case of Indiana, estimates show that up to 1937 hybrid corn was not significant, as in 1934 it represented only 0.3 per cent of the corn acreage in that state; in 1935 only 1.5 per cent, and in 1936 about 7 per cent. In 1937 it rose to 29 per cent and then more than doubled in 1938. Illinois estimates for the same years indicate about 0.2 per cent in 1934, about 0.5 per cent in 1935, a little over 3 per cent in 1936, 14 per cent in 1937 and then a sharp rise to 59 per cent in

[1] Paper No. 1699, Scientific Journal Series of the Minnesota Agricultural Experiment Station.

[2] Ohio, Indiana, Illinois, Michigan, Wisconsin, Missouri, Iowa, Minnesota, Kansas, Nebraska, South Dakota and North Dakota.

1938. The estimates for Iowa for these years are 1, 3, 5, 13 and 50 per cent. The proportion of the harvested corn acreage planted to hybrid seed in other corn belt states in 1938 were estimated to be as follows: Ohio, 38 per cent; Wisconsin, 20 per cent; Minnesota, 11 per cent; South Dakota, 10 per cent; Nebraska, 9 per cent; Missouri, 5 per cent; Michigan, Kansas and North Dakota less than 2 per cent. The drouth which interfered with the development of hybrid strains and the unsatisfactory results obtained with seed brought in from other areas probably explain the less rapid expansion in Missouri and the great plains states from Kansas through the Dakotas.

The estimates suggest that only about 186,000 acres, or about 0.4 per cent of the corn acreage harvested in the

TABLE 1. ESTIMATED PERCENTAGE OF TOTAL CORN ACREAGE THAT WILL BE PLANTED TO HYBRID SEED IN DESIGNATED STATES; PROBABLE DATE THIS GOAL WILL BE REACHED; AND PERCENTAGE INCREASE IN YIELD PER ACRE FROM HYBRID SEED

	Percentage of total corn acreage that will ultimately be planted to hybrid seed	Probable date when this goal will be reached	Per cent increase in yield per acre from hybrid seed at the present time	Probable per cent increase in yield per acre from hybrid seed in the future
Eastern Corn Belt				
Ohio	75–85	*	15–25	20–25
Indiana	95	1945	10	12–15
Michigan	50	1948	15	20–25
Illinois	80	1939	15	25
Wisconsin	75	1945	10	15–20
Southwestern Corn Belt				
Missouri	75–85	1943–46	10	15
Kansas	75	1945	5**	25
Northwestern Corn Belt				
Iowa	90	1944	15	20
Nebraska	60	1948	15	20
Minnesota	90	1945	15	20
North Dakota	50	1945	10	10–20
South Dakota	*	*	*	*

* No estimate submitted.

** The only hybrid seed corn sold in Kansas up to the present time has been of out-of-state origin and consequently has not been particularly well adapted to Kansas conditions. Some Kansas experimental hybrids show as much promise of being better than the standard open-pollinated varieties as hybrids in other corn belt states.

twelve states, were planted to hybrid corn in 1934. The acreage in 1935 was about 486,000, or 0.9 per cent of the total. In 1936 it was about 1,400,000 acres, or 2.5 per cent. The acreage apparently more than tripled the next year, going to 4,800,000 acres, or about 9 per cent, while in 1938 it was about 16,000,000 acres. This latter figure represents about 31 per cent of the corn acreage in the twelve states and about 18 per cent of the total corn acreage for the entire United States.

The major consequences of the shift to hybrid seed corn are associated with the higher yields which result. For that reason, increases in acre yields become important. Unfortunately, the movement is still so new that extensive records are not yet available. In the absence of such data, the corn breeders were requested to estimate the increases in yields now being obtained as well as the probable increases that appear to be attainable in the future. In order to get a picture of prospects for future expansion in acreage of hybrid corn, they were also asked to estimate the percentage of the commercial corn acreage which they believe will ultimately be planted to hybrid corn and to indicate their ideas as to when this acreage may be reached. The answers are summarized in table 1. The range in estimates of increased yields being obtained was from 5 to 25 per cent. Four replies estimated a 10 per cent increase, and 5 estimated a 15 per cent increase. Looking to further advances, the estimates for the future ranged from 15 to 25 per cent increase.

Opinions are that hybrid corn will be grown on 75 to 95 per cent of the corn acreage in eight of the twelve states and that in the case of three others the percentage may be 50 to 60. Estimates as to the time when these totals will be reached vary from 1939 to 1948. Hybrid corn already has become a factor of considerable importance and the speed at which the change to it is taking place means that the economic consequences are not something for the distant future but are confronting us now.

The effects of hybrid corn naturally will be most marked in these twelve states. Over a period of time there has been some tendency towards increased centralization of production in the corn-belt states. However, the trend has not been

uniform for all of this area as there has been a decided shift of the center of corn production towards the north and west. Because of differences within the region, the effects of hybrid corn will not be uniform for all parts of the corn belt.

TABLE 2. PROBABLE PRODUCTION OF CORN IN THE TWELVE CORN-BELT STATES DUE TO USE OF HYBRID SEED

	Average acreage harvested 1929–33*	Average yield per acre 1923–32**	Average production from open-pollinated seed	Probable per cent of acreage that will ultimately be planted to hybrid seed***	Probable total production****
	(acres) (000 omitted)	(bu.)	(bu.) (000 omitted)	(per cent)	(bu.) (000 omitted)
Eastern Corn Belt					
Ohio	3,457	36.6	126,519	80	146,762
Indiana	4,472	34.6	154,731	95	184,130
Michigan	1,324	29.8	39,461	50	43,407
Illinois	8,960	36.0	322,560	80	374,170
Wisconsin	2,083	32.0	66,656	75	76,654
Sub-total	20,296		709,927		825,123
Southwestern Corn Belt					
Missouri	6,175	25.0	154,370	80	179,069
Kansas	6,869	19.3	132,583	75	152,471
Sub-total	13,044		286,953		331,540
Northwestern Corn Belt					
Iowa	11,420	37.8	431,691	90	509,396
Nebraska	10,039	24.0	240,946	60	269,859
Minnesota	4,716	31.2	147,133	90	173,617
South Dakota	4,696	19.2	90,156	60*****	100,974
North Dakota	1,194	18.5	22,082	50	24,289
Sub-total	32,065		932,008		1,078,135
TOTAL	65,405		1,928,888		2,234,798

* Source: Bureau of Agricultural Economics.

** Crops and Markets, Dec. 1937, p. 264.

*** Based upon estimates of corn breeders in the respective states.

**** Based upon a 20 per cent increase in yield from hybrid seed, on the proportion of total corn acreage indicated in column 4.

***** As no estimate was submitted for South Dakota we have assumed that the same proportion of the total acreage would be planted to hybrid seed as estimated for Nebraska.

The estimates of increased yields resulting from the adoption of hybrid corn may be used as a basis for setting up

estimates of effects on production. This has been done in table 2 in which the estimated increases have been applied to average acreages and average yields for the twelve corn-belt states. In arriving at these results, 20 per cent has been employed as the probable increase obtainable from the use of hybrid corn.[2a] On the basis of these assumptions, an increase of over 300 million bushels in the production of these states would occur. This increase would include 115 million bushels in the 5 eastern corn-belt states; 45 million in the 2 southwestern, and 146 million in the 5 northwestern states. With such acreages and yields, the corn-belt would average over 2.2 billion bushels, or only 400 million bushels less than the national average for the 34-year period ending with 1933. This indicates that with the increased yields expected from hybrid corn the corn belt states would be capable of producing practically all of the corn which it is anticipated will be required in coming years, without an increase in acreage.[3]

The expectation is that hybrid seed will give similar percentage increases in yields in areas of high and low yields. If that is correct, the increases in terms of bushels will be decidedly greater in areas of high yields.[4] Table 3 presents comparisons of Iowa with several other states on the basis of average yields. Iowa possesses an advantage in growing corn over the other states included in this tabulation in that it obtains higher yields. As hybrid corn increases yields on a relative basis it will increase Iowa's advantage over regions of lower yields. Thus, where Iowa over a ten-year period averaged 15 bushels more than Kentucky and 27 bushels above Georgia's yield, a twenty per cent increase in yields will raise the differential over Kentucky to 18 bushels and that over Georgia to over 32 bushels.

These advantages are in terms of physical quantity.

[2a] "Looking ahead, we can be fairly certain that in 1945 there will be well adapted commercial strains of hybrid corn for practically every section of the corn belt, that will yield at least 20 per cent more than the average open-pollinated corn as grown in the respective parts of the corn belt in 1920." H. A. Wallace, Spragg Memorial Lectures on Plant Breeding, Michigan State College, April 21, 1938, pp. 7–8.

[3] It is not contended that this extreme centralization will take place.

[4] It is, of course, possible that the future may bring developments which will produce relatively greater results in areas of low yield. If that should occur the effects on the comparative advantage of different regions would be changed.

Viewed from the standpoint of economic gains the advantage will still lie with high-yielding areas because costs will not increase proportionately with the increase in yields. The costs which may be expected to show some increase are those of seed and labor, arising from the fact that hybrid seed is somewhat more expensive than open-pollinated seed and

TABLE 3. THE INFLUENCE OF HYBRID SEED CORN ON INTERREGIONAL COMPETITION

State	Average yield per acre from open-pollinated seed 1923–32*	Increase in yield per acre from hybrid seed (20 per cent)	Yield per acre from hybrid seed	Difference in yields per acre in Iowa and yields in other states		
				With open-pollinated seed	With hybrid seed	Advantage gained by Iowa from hybrid seed
	(bu.)	(bu.)	(bu.)	(bu.)	(bu.)	(bu.)
Iowa	37.8	7.56	45.36	—	—	—
Kentucky	22.4	4.48	26.88	−15.4	−18.48	3.08
Kansas	19.3	3.86	23.16	−18.5	−22.20	3.70
Oklahoma	16.6	3.32	19.92	−21.2	−25.44	4.24
Georgia	10.4	2.08	12.48	−27.4	−32.88	5.48

* Crops and Markets, U. S. Dept. of Agr., Dec., 1937, p. 264.

that some additional labor will be required to handle the larger output. Higher yields will draw somewhat more heavily on the soil and may require some additional expense for fertilizers, as time goes on.

Hybrid corn is of such recent introduction that the price of seed has not yet been standardized. Prices during 1934 to 1936, varied as much as from $6.00 to $15.00 a bushel. The range in 1937 was about $7.50 to $11.00 while in 1938, it was from $5.50 to $8.00.

On the assumption that progress in seed production will tend to lead to somewhat lower costs, a price of $5.00 a bushel for seed is employed here for purpose of illustration. Allowing one bushel of seed for each 7 acres gives a seed cost of $.714 an acre. If $1.50 a bushel be assumed as the cost of open-pollinated seed, the acre cost for such seed would be $.214. On the basis of the assumed figures, hybrid seed would cost $.50 an acre more than the open-pollinated. With corn at 50 cents a bushel, an increase of one bushel an acre would about cover the extra seed cost. While the increased seed

costs would not be a factor of large importance in the case of corn, it would be relatively less in high-yielding than in low-yielding areas.

Hybrid corn involves no additional labor in preparing the soil for the crop or in its cultivation during the growing season. The larger yields may increase somewhat the labor involved in husking and cribbing the larger output. However, even here the increase will not be as great as the increase in yield because of the greater uniformity in the stand of hybrid corn, its stiffer stalk and the fact that the ears are found at more nearly the same level and position on the stalk so that husking is speeded up. This corn lends itself well to the use of mechanical corn pickers, a consideration of some importance in view of the rapid expansion in their use in the corn belt.

In view of the fact that the gains from the use of hybrid seed will be relatively greater in better areas, the adoption may be expected to be most rapid and general in such areas with a resultant tendency of corn production to become even more concentrated than it is now. It is not contended that other areas will go out of corn entirely as a result. Hogs will continue to play some part in the agriculture of many areas outside the commercial corn producing region and corn will be produced on many farms in those areas for this reason. However, the prospects are that the inducements of such areas to expand or even maintain corn and hog production will be lessened.

If only an occasional farmer turned to hybrid corn those who did would stand in a position to gain and retain decided advantages for themselves. However, its adoption is proceeding with such rapidity that its use appears destined to become general among commercial corn farmers in a relatively short span of years. The effects consequently will be generalized very quickly. Its consequences will not be uniform for all farmers because of the wide differences in yields obtained by farmers even in the same area. The better farmers who ordinarily obtain higher yields will gain more than their less efficient neighbors. In short, the adoption of hybrid corn affects not only the relationship between different regions but also between farmers in a given region.

Some differences between hybrid corn and various other changes in production technique may be noted. The substitution of a machine for hand labor or less efficient machinery requires an outlay of capital and may involve the scrapping of old equipment and methods. It usually makes it possible to reduce the amount of labor applied to farm production but ordinarily does not increase total output from a given acreage materially. Expansion of agricultural production results only if it leads to bringing more land into production. A shift from grade to purebred livestock, or other improvement in herds usually requires a considerable outlay or else is a slow, gradual process. In deciding upon such changes the farmer must weigh costs against gains. Hybrid corn, however, does not involve purchase of new equipment or the adoption of new methods but leads to an increase in yield with relatively unimportant changes in the methods and expenses of production.

Land has value because of the returns it yields or is expected to yield in the future. Land values consequently result from a complex of factors affecting present income and future prospects. Hybrid corn increases the physical output obtained from land. How the economic return will be affected depends upon demand and the adjustments which are made. These adjustments depend upon a number of considerations and are likely to take a variety of forms. If no change is made in the acreage devoted to corn, supply will be increased very materially and prices will fall unless new outlets can be found. Most farmers grow corn for feeding on the farm rather than for cash sale. If acreage is maintained, the result which may be anticipated is an increase in livestock production, particularly hogs, with lower prices. Reductions in cost of producing corn should make some readjustment in levels of hog prices possible with consequent widening of the market. This, of course, would increase the disadvantage of farmers who do not adopt hybrid corn. As suggested above, the competitive position of the corn belt should be strengthened in comparison with that of areas where yields of corn are less. The competitive relationships between individual farmers also will be affected. Any increase in production which continues permanently therefore will not be distributed uni-

formly. In fact, areas at a disadvantage are likely to feel pressure to reduce rather than increase corn production.

Unless new outlets develop, it does not seem probable that the market can absorb the increased supply which the present acreage is capable of producing when hybrid seed is used, except at materially lower prices. The effect, therefore, depends to an important degree on whether acreage is maintained or curtailed and the extent of curtailment, if any. Markets now available for crops which might be substituted for corn on part of the acreage do not offer much promise of shifts to them. Some shift to soil conserving crops may take place but this in turn will affect the production of livestock and livestock products with consequent repercussions in the markets. In a sense increasing the acre yields is equivalent to providing more land for the farmer and this should enable him to farm more extensively. However, his labor and equipment are still available for application to the land. Some farmers may dispense with labor now hired or take advantage of the opportunity to enjoy more leisure. However, many others will continue to employ the factors of production available to them as fully as possible.

The fact that hybrid corn lowers unit costs of production and the limited opportunities for other uses of the land, labor and equipment, suggest that drastic curtailment of corn acreage in the near future by individual action of the growers is unlikely. The prospects are that under these circumstances the gains from hybrid corn will be shared with the consumers rather promptly in the form of lower prices, particularly on livestock and its products. The rate and amount of improvement in conditions affecting demand for farm products will have an important effect on the results. The extent to which foreign outlets, especially for lard and pork, will be expanded is another important factor.

American agriculture is in the position of having more land in use than required to satisfy existing markets. As hybrid corn serves to make the available land yield more physical output, it intensifies the land supply situation. While some lands may rise in value because their advantages over other lands are increased, the general tendency appears likely to be one of lowering land values.

The placing of emphasis on economic problems which are likely to arise because of the development of hybrid corn must not lead to the conclusion that it is an undesirable addition to agricultural technique. Naturally, it is much less disturbing not to have the status quo upset by such advances. But it must not be forgotten that improvements which enable man to satisfy his wants more fully and with less effort are the means by which higher living standards may be provided. The way to progress does not lie in obstructing improvements but in adopting them and in adjusting ourselves to them as quickly as possible. Research which leads to technical progress is to be commended and supported, not condemned. We need, however, to parallel such progress with research and study to assist in making needed adaptations to change.

NOTES

INTENSITY AND LAND RENT—A REPLY[1]

Because considerations fundamental to the development of a sound theoretical basis for agricultural land classification are involved, it is felt that some attention should be given to the article Intensity and Land Rent written by Professor Hammar, and appearing in the November, 1938 issue of this JOURNAL. A further reason which might justify the appearance of this comment is that the writer is sympathetic to the use of the economist's tools in laying a foundation for tasks such as that examined by Professor Hammar. And finally, by way of introduction, while this worker found the article very suggestive, he has some fundamental objections to the analysis, and these objections are presented solely in the hope that they will inspire further thought in what is viewed as a fruitful field for work.

The central thought of Professor Hammar's paper is that intensity alone will not serve as a guide to land values, and that in analyzing these on different grades of land one should consider the two dimensions of the productivity function: capacity and efficiency. He does, however, confess that "in any particular area . . . variations in capacity and, hence, in intensity of use may reflect with reasonable accuracy differences in the grades of land." He continues, that "any attempt to use the method of grading land on the basis of intensity over large areas is . . . sure to come to grief unless, indeed, in actual practice allowance is made for varying efficiencies."[2] The first quoted statement is significant for it admits the utility of capacity as a measure of land value. Professor Hammar's complaint is that the device cannot safely be used over wider range than a single type of farming area. With this the writer is in entire agreement. However, he cannot appreciate that the joint use of the measures, capacity and efficiency, are of significant value in the wider field—over the whole country, or even (as Professor Hammar suggests) over the whole agricultural world. Those (mainly workers in the Farm Credit Administration) who are using and developing the method of land classification based on intensity of use recognize the difficulty pointed out by Dr. Ham-

[1] The writer has had the benefit of helpful suggestions from staff members of the Department of Farm Economics of the University of Kentucky, especially from Professor Bradford, Max Tharp, and Albert I. Eads.

[2] Hammar, C. H., Intensity and Land Rent, Journ. Farm Econ., 20: 786, 1938.

mar. They would, it might safely be remarked, go one step further in acknowledging hazards in applying any method of land classification over a large area. The latter problem is, at the present time, more largely philosophical than technological and not one to which the concepts of capacity and efficiency render a very positive contribution.

Setting up a nation-wide classification of land based on capacity and efficiency measures is a task viewed by the writer as being extremely difficult. Were he asked for any classification over a wide area, he would resort, as a preliminary step, to a cross tabulation of acreages of agricultural land by type of farming area and by normal value (the latter on specified assumptions regarding the level of costs and of prices). This would be a straight forward net rent approach. In this regard he has for some time wondered what constitutes an enlightened and fair interpretation of table 7 (p. 127) of the December 1934 report of the National Resources Board. This table, which provided a portion of the data in Professor Hammar's table 1, gives an inventory of the agricultural land of the United States by physical productivity classes. It, for instance, tells that there are 101,037,573 acres of first grade land in the United States, a result achieved by adding Massachusetts tobacco land, Iowa corn land, Florida orchard acres and so on. The foregoing must be interpreted to mean that land productivity classifications over regions larger than a single type of farming area, even though accomplished by means of capacity and efficiency measures, are difficult of qualitative interpretation, and virtually forbid quantitative treatments, even as simple as that of addition.

The explanation of the regionalization of farming on a national and even on an international basis in terms of capacity and efficiency is subject to so severe limitations as to make it hardly justify even academic interest. To lean heavily on comparisons of physical productivity in explaining agricultural regionalization is to deal in superficial rather than in fundamental terms. Surely transportation, market, and labor orientation generally outweigh purely physical considerations in the determination of the products to be raised and the form of marketing over wide areas. This would seem to make more fruitful the classic Weber approach, and the current method of the Bureau of Agricultural Economics and cooperating agencies in analyzing the interregional configuration of agricultural production.

The statistical verification of either "equilibrium" notions of the relationship between intensity and land rent or the more refined ones presented by Professor Hammar are difficult. The excellent and widely accepted work of Lewis,[3] pragmatic though it be, is the best known to the writer. Certainly neither table 1 nor table 2 of Professor Hammar's work makes a positive contribution to clarifying the notion. He does recognize that "certain objections may be raised to the use of these data as accurately reflecting degrees of intensity.[4] To the writer these appear to be so great as to make the inclusion of these tables of little value. As a basis for even tentative conclusion, table 1 can be objected to on the following grounds: (1) the capacity and efficiency of the farm population in the five states enumerated vary tremendously, a fact which makes a straight forward interpretation of the table dangerous, (2) capital application in conjunction with labor is ignored, (3) the census definition of a farm is thoroughly misleading, (4) comparisons of the percentage distribution of grades of land between states in different type of farming areas are extremely difficult of interpretation. The economist in the southern states realizes that to attempt to explain the land use population pattern largely in economic terms is to insure little progress in his work; he must draw heavily upon sociological and historical considerations. To illustrate one might cite the case of a moderate sized farm in Western Kentucky on which there are resident forty-seven negroes in addition to the owner's family. Here one would find no evidence that intensity of labor application or of entrepreneurship was proportionate with the farm population. In fact a farm management field man finds the contrary to be the case; namely, that this specific operator is unlikely to enjoy financial success on his present farm as long as that farm must contribute to the support of over fifty individuals. While this is a specific case, and an extreme one, it is indicative that very different situations exist in the five states enumerated in Dr. Hammar's table 1, and warns against the type of comparisons made in his paper.

In table 2, Professor Hammar makes a unit of surface soil nitrogen a fixed factor, and then proceeds to study the intensity of use of land of varying productive quality. While the substitution of a

---

[3] Lewis, A. B., An Economic Study of Land Utilization in Tompkins County, New York. Cornell Bull. 590.

[4] Previous cit., p. 782.

unit of nitrogen in place of a unit of area as a fixed factor may have peculiar merit in Missouri, it confuses rather than clarifies our examination of intensity. Even though it is legitimate to fix for analytical purposes any factor, acceptable custom has surely taught us to consider intensity in terms of fixed units of land area. Thus we are led to desire inquiry into what table 2 of Dr. Hammar's paper would bring out if land area were used as a fixed factor. In any case, in rationally managed production processes, variable elements are used heavily or sparingly because of the relation between costs and returns and these, it would appear, can be more satisfactorily measured in terms of some areal basis such as acreage.

If this paper can serve a purpose sufficient to merit its appearance, that purpose is to examine the concepts of capacity and efficiency as expositional and analytical devices. Although these concepts have been established, they have not been given a sufficiently critical examination to determine their utility and limitations in research work. In the study being reviewed Professor Hammar[5] introduces the idea that net efficiency and rent can be determined from the slope of the marginal productivity function, given the cost per unit of the variable element. This, however, is not at all the case. Net efficiency of a fixed factor bears no necessary relationship to the slope of the marginal productivity function, measured by the slope of the tangent to the marginal curve at the point of highest profit combination. Moreover, mathematically or statistically derived marginal productivity functions appear so frequently to have such changing curvature as to make their measurement at any other point of little meaning. Efficiency in net terms (and this may be a new expositional presentation, although the implication of it is clearly in Dr. Black's work[6]) is merely the length of the ordinate between the marginal and average productivity curves measured at the point of highest profit combination, and rent, or the amount imputable to the fixed factor by the marginal analysis, is represented merely by the rectangle whose ordinate is the net efficiency and whose abscissa (capacity) is the number of units of variable factors entering into the highest profit combination. Thus, in figure 1 the optimum or highest profit combination (marginal product equal to marginal cost) is assumed to be reached at O N units of variable factors; and in this case O N represents capacity,

[5] Previous cit., p. 786 and Figure 2.
[6] Production Economics, p. 357–358.

C D net efficiency and A B C D rent. This is put forward as an advance over the approach which considers the three measurements in terms of the marginal productivity function alone.

That this method is an advance can be proved by resort to a little work with actual curves. Let us suppose that one has the two curves given by the following observations, and representing the marginal return from successive applications of the variable: curve I, 0, 30, 90, 200, 160, 120, 80, 40, and 10; curve II, 0, 280, 300, 120, 90, 65, 50, 25, and 10. At numbers of inputs beyond the third,

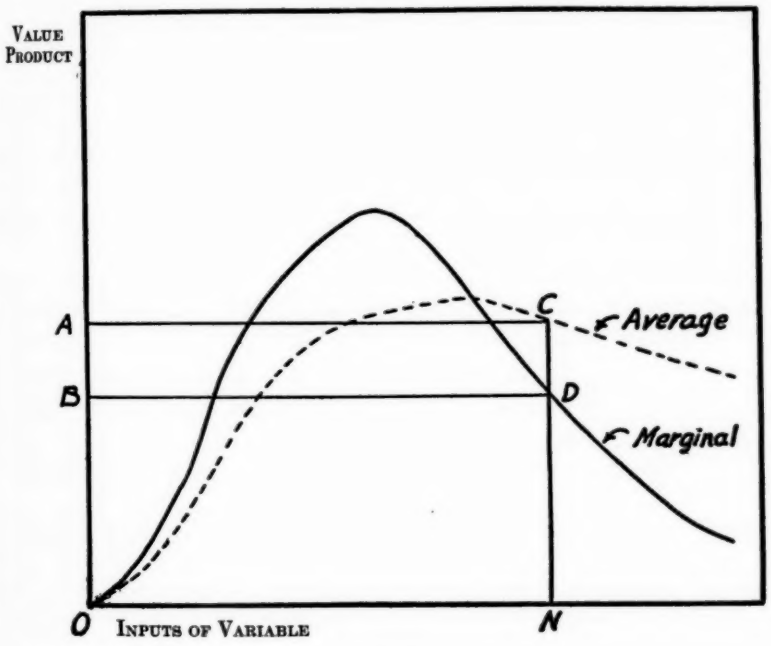


FIG. 1.

which includes all of the zone of rational production for curve I and most of that of curve II, the slope of curve I is greater than that of curve II. Using the slope criterion one would thus conclude that curve I generally represented more efficient land than curve II. However, using the definition of efficiency illustrated in figure 1, the contrary proves to be the case. Multiplying examples to indicate the dangers of using the slope of the marginal function as an indicator of net efficiency is unnecessary.

Rendering unto two attributes or devices descriptive of productivity functions, importance which seems, at times, to leave the functions themselves virtually in eclipse can scarcely be conceived of, as contributing to the advance of economic analysis. The really important features of productivity functions are their height and their shape. Capacity and efficiency considerations, it must be confessed, have as frequently diverted attention from these as they have elaborated and stressed them. Agricultural economists are in need of fundamental theoretical work which will provide a basis for sound land classification.

The seemingly long bill of complaints about the paper being reviewed should not be interpreted to indicate that this worker believes it of little value. Rather, his desire is to stimulate further consideration of the utility of theoretical tools in providing an acceptable basis for land classification. Recognizing this, the want of a positive and definitely conclusive contribution, in the usual sense of the phrase, may be understood.

DAVID L. MACFARLANE

University of Kentucky

SOME ECONOMIC ASPECTS OF UNIVERSITY PATENTS

During recent years many members of university faculties have made inventions of considerable commercial importance. At the beginning of 1936, separate patent-holding agencies were operating at the University of Cincinnati, Columbia, Iowa State College, Lehigh, Pennsylvania State College, Purdue, Rutgers, University of Utah, University of Wisconsin, and Wittenberg College. Certain other institutions had made their charters broad enough to permit them to hold patents directly or through committees of their boards or faculties. Among these were the Universities of Illinois and Minnesota, the California and Massachusetts Institutes of Technology, and the Franklin Institute.[1] In 1933 the American Association for the Advancement of Science appointed a special committee to study the problem, and its report was submitted in 1934.[2] This report considered a number of objections which had been raised against universities accepting royalties from patents

[1] Gray, G. C., Science and Profits, Harpers' Monthly, 172: 539–549, April, 1936.

[2] The Protection by Patents of Scientific Discoveries, Occasional Publication No. 1, Jan., 1934.

and found them largely unwarranted. Most of these objections expressed fear that University research would be debased or commercialized and that the university's public relations and reputation for intellectual integrity would suffer. Interestingly enough, however, the monopolistic aspects of the problem were almost completely ignored. One conspicuous example will serve to bring out these important economic implications.

In 1925 a member of the staff of the University of Wisconsin, Professor Harry Steenbock, received a patent on a process of adding Vitamin D to evaporated milk and other food products by irradiation. The inventor assigned the patent to the Wisconsin Alumni Research Foundation, a separate patent-holding agency which was to act as the trustee of royalties derived from the licensed use of patents resulting from University research.[3] The resulting revenue was to be used for providing further research appointments and facilities in the University. By 1931 royalties amounted to nearly $1,000 a day, mostly from the Steenbock patent. In 1935 the Foundation held 16 patents and 5 pending applications. During the economic crisis of 1933–34, the Foundation contributed $325,000 to the University to prevent drastic curtailment of its research program which a reduction of state appropriations would otherwise have made necessary. Altogether the Foundation had contributed nearly $700,000 for scientific research by 1937, besides providing an endowment sufficient to produce an annual income of $125–140,000 a year.[4] While the use of its revenue has obviously been admirable, the economic consequences may have been such as to raise serious question as to the net social effects.

In the Chicago hearings on the evaporated milk agreement under the Agricultural Adjustment Act, Pet Milk Company, one of the country's largest condensed milk corporations, argued that there should be no differentiation between irradiated (Vitamin D added) and un-irradiated evaporated milk in the resale price schedule established under the agreement.[5] A representative of a Washington State cooperative, which manufactured evaporated milk, opposed

[3] Royalties are apportioned between the Foundation and patentee in shares of 85 and 15 per cent respectively, after allowing for the expenses of securing, maintaining, and (if necessary) defending the patent.

[4] A Decade of Service. Report of Director of Wisconsin Alumni Research Foundation.

[5] Hearing on Evaporated Milk Agreement. Agricultural Adjustment Administration. Docket No. 214: 13, Chicago, July 24, 1934.

Pet's contention, "since it would allow evaporated milk to which Vitamin D has been added to sell at the same price as ordinary evaporated milk.

"This clearly tends to create a monopolistic control of the evaporated milk business by the five or six companies which have an exclusive license from the Wisconsin Alumni Foundation for production of Vitamin D evaporated milk by irradiation . . . a distinct advantage has been enjoyed by that product in the sale to consumers and unless it is sold at a higher price to the consumer, other brands . . . do not sell in their usual volume." The irradiation process was being extensively advertised, and was said to be prejudicial to the alternative method of adding Vitamin D in the form of cod-liver oil.

In support of these views, a letter to an official of a California cooperative from the Director of the Wisconsin Alumni Research Foundation was inserted in the record. This letter, dated May 7, 1934, included the following statement:

" . . . the policy of the . . . Foundation . . . [is] to limit the number of licenses, at the present time, to a group of five packers of the nationally known brands.

"The primary reason for . . . this is that in putting irradiated milk before the public it is going to be necessary to engage in an extensive advertising program which, naturally, can best be done by the concerns who are already in the field of advertising and production on a national scale."[6]

While it is true that the West Coast cooperatives produced evaporated milk largely as a surplus operation in conjunction with important fluid-milk markets rather than as a specialty (although large amounts of evaporated milk were produced), it was no doubt detrimental to the Western producer interests to be refused the use of this irradiation process. But it was, as we shall see, probably even more detrimental to Wisconsin farmers, especially those who sell milk for condensing purposes, since Wisconsin is the leading state in the production of evaporated and condensed milk. In 1935, of 111 Wisconsin plants receiving over 10 million

[6] The Foundation limited the granting of licenses "mainly to such essential carriers as bread, milk and cereals." Chewing gum and sausage manufacturers were refused licenses since, "notwithstanding the fact that such business . . . would have yielded the Foundation handsome royalties, the Foundation's policy is to refuse the use of the process *where the objective is an advertising appeal.*" (A Decade of Service, *op. cit.*, p. 3. Italics mine.) Nevertheless, the Foundation also maintained the *prestige* of the process thereby and hence its advertising appeal for the companies which did receive licenses. It would be harder to sell Vitamin D milk if the consumer could also buy "irradiated" chewing gum or wieners.

pounds of milk per year—the majority of which produced condensed milk either seasonally or full-time—68 per cent were operated by national milk companies.[7] This emphasizes the importance of the marked trend toward concentration in the fluid milk and condensed milk industries to the State of Wisconsin. The Wisconsin farmer is, therefore, of necessity vitally interested in this trend.

There is little doubt that the limitation of licenses to the five or six companies controlling 60–65 per cent of the nation's evaporated milk will serve to perpetuate and enhance concentration in that industry, since the very firms granted the licenses have been those following the most restrictive policies since the war, while differentiating product to a marked degree through branding and advertising and discriminating in prices through the use of "second labels." The granting to these few companies of exclusive rights to the use of the irradiation process has lent great strength, in the form of additional product differentiation, where strength is least needed and probably, from a social point of view, already excessive. Furthermore, the leading chain-store organizations, which offered the only effective competition in the manufacture of evaporated milk during the past decade, were apparently excluded.

While the Foundation sought to prevent an appreciable increase in the cost of the product to the consumer,[8] such price control is not feasible. While marked increases in price might be prevented, it cannot be assumed that prices at the time the license is granted do not include serious monopoly elements. If the selling price is already monopolistically high, an exclusive license gives the licensee another weapon in maintaining his monopoly advantage over competitors who are refused a license.

The most common argument given in support of a limited number of exclusive licenses is the necessity of assuring the commercial development of the patent. This argument assumes that (1) the firms in the given industry are small and financially weak;[9] and

---

[7] Annual Report of the Director, Agricultural Experiment Station, Univ. of Wisconsin, Part I, p. 7, November, 1938.

[8] Fletcher, L. J., Commercial Distribution of Patents Granted to College and University Staff Members. Address of Nov. 15, 1938, before Assn. of Land Grant Colleges, Chicago, Mimeo., p. 7, quoting from 1935 report of Wisconsin Alumni Research Foundation.

[9] Charles F. Kettering of General Motors has supported patents on these grounds. (Boyd, T. A. Putting Research to Work, *Invention and the Engineer's Relation to It.* Addresses & Digest of Discussion, American Engineering Council, Detroit, Nov. 11, 1938, pp. 23–24.) It is interesting to note that this argument is similar to the familiar "infant industries" justification of a tariff. Certainly the Steenbock licensees needed no such protection on these grounds.

(2) free competition exists to protect the producer and consumer.[10] When these conditions are not met—and they usually are not in old, well-established industries, where control is concentrated—limiting the number of licenses to the few dominant firms may not be socially desirable.

The dilemma of university patents is this: unless the number of licenses is limited, they lose the chief source of their value, since the potential monopolistic advantage is dissipated as the number of licenses increases. On the other hand, the companies able to pay most for the use of such patents are those who are in the best position to exploit the advantages of the legal monopoly conferred. The only solution from the social viewpoint, therefore, is probably to patent the results of technical research in public institutions (but only in order to be in a position to prevent their misuse) and grant their use free or on reasonable terms (from which the justifiable cost of quality maintenance could be recouped) to all who find them technically and economically feasible and will meet the desired standards of quality.[11] Even then, the advantages to large corporations already in the field will be tremendous, because of their already-extensive advertising programs and large financial resources.[12] There will be fewer funds for university research, to be sure, but the net result to society will probably be beneficial.

WILLIAM H. NICHOLLS

Iowa State College

TYPE OF FARMING RESEARCH AGAIN[1]

Prof. W. W. Wilcox[2] has performed a service for farm manage-

[10] Thus Mr. Fletcher (*loc. cit.*, p. 3) has argued: "*Free competition gives us a splendid automatic balance between value and price.* It is therefore recommended that some of these items [connected with too high a price to the public] that sometimes worry those concerned with patents and merchandising be left to the public to evaluate" (italics mine). Unfortunately, where there is marked concentration in an industry, the price set by self-interest and the socially-desirable price are not likely to be the same.

[11] The dairy industry should long remember the generosity of Wisconsin's Babcock, who gave his butter-fat test to the world gratis. His failure to patent the test, however, led to misuse through the manufacture of inaccurate glass-ware. (Fletcher, *loc. cit.*, p. 4.) The public would have benefited had he retained control, by means of a patent, over quality maintenance; but it would also have lost if, under such a patent, any company willing to meet the proper standards had been refused a license.

[12] From an economic point of view, there is even something to be said for granting licenses only to the stronger, more efficient independents.

[1] The final changes in this paper became the responsibility of the editor, since the manuscript was accepted for publication shortly before the death of Dr. Holmes.

[2] Types of Farming Research and Farm Management. JOURNAL OF FARM ECONOMICS. 20: 417, 1938.

ment workers by pointing out some of the shortcomings of types of farming research which are apparent when it is evaluated on the basis of the published results. I wish to offer the following comments.

It has been obvious for some time that these projects are running too far to the descriptive side and not paying enough attention to the analytical phase of research. It is believed here that a type-of-farming project has two phases: (1), the picturization of agriculture through the use of readily available statistics. This is the descriptive phase and it has overshadowed the analytical phase because it was the easier part of the task. (2), The analytical, has for its objective the explaining of the reasons for farming becoming what it is revealed to be, by the description. In other words, it is a study in comparative advantage. It has seemed to me that this latter phase of the project was the more important and valuable because the researcher was able to obtain an understanding of farming in its economic aspects which could be obtained in no other way and which was extremely desirable from the point of view of education, further research, and action programs, whether utilized by the research worker himself, employed in some of these other fields of work, or by other workers using his published results.

Not all of the types of farming studies have been merely descriptive in nature. The Montana Type of Farming Project not only involves a differentiation of farms by types to an extent which would meet Wilcox' criticism that these projects have failed to note the departure from the prevailing types, but also is more analytical in its attack than the average type-of-farming study. This is true of other studies likewise. I would cite Iowa Agricultural Experiment Station Bulletins 256, 259, and 323. Also, Nebraska Station Bulletin No. 244. Also, Chapter 3 in Elliott's Census Monograph entitled, "Types of Farming in the United States." All of these publications include a considerable amount of causal analysis or discussions of the comparative advantage of the types of farming as they are described.

Many of the type-of-farming publications cover only the first of these two steps. They should, therefore, be judged by their value as orientations for further research, and as a needed factual and descriptive background for educational work, and even for action programs.

The AAA, the Land Utilization Program, and other action agencies have felt the need for differentiation of farming on an area

basis. Where this need has not been provided through types-of-farming studies, these agencies have taken steps to provide it themselves. The land classification work undertaken in the Resettlement Administration is essentially similar to the first step in types of farming research. In the regional adjustment study of 1935 it seemed necessary as a first step in analysis to delineate as accurately as time would permit the types-of-farming areas within which specific adjustments could be recommended.

Type-of-farming research therefore seems to have met a real need and, since this need is a permanent one and the demand for this sort of service will not wane, it seems obvious that type-of-farming research itself will not wane, as Mr. Wilcox implies that it will, because new phases of the public agricultural program are constantly developing. This applies not only to elements in the federal agricultural program, but also to agricultural educational programs in which the States are concerned.

Mr. Wilcox' evaluation of the results of type-of-farming research runs in terms of what they are worth in themselves as an end-product, whereas, in actual experience their value has been largely in terms of their service as a means of orientation for other research, for extension work and for general programs of agricultural adjustment. I prefer to think of the descriptive phase of a type-of-farming study as the first step in an effort toward further study of farming, or in a program of agricultural education. The second step should be a detailed study of situations in each type-of-farming area, that is, area studies which may be prosecuted by surveys, modified route projects, or other less formal methods. The next step, after detailed knowledge of situations in each area has been obtained, should be a synthesis of data and inquiry into comparative advantage in the several areas in the State.

C. L. HOLMES

Bureau of Agricultural Economics

RELATION BETWEEN CORN AND WHEAT FUTURES

Statements of grain reporters and others associated with the grain markets regarding relationships between daily price changes give the impression that changes in the futures price of one grain are closely related to changes in the futures prices of other grains. This discussion gives the results of a statistical analysis in which changes in futures prices of corn are related to changes in futures

prices of wheat. The results given here show that while in some periods there appears to be little relationship between the changes in these futures, in general there is a correlation which is high enough to be significant.

Daily changes in wheat futures were taken as the independent variable and daily changes in corn futures as the dependent variable. A separate coefficient of correlation was computed for each series of daily prices for the following months: May futures during January, July futures during April, September futures during July, and December futures during August for the years 1933 to 1938, inclusive. As weather conditions are probably the largest single factor influencing changes in futures prices, the months just mentioned were selected because they show the relationship between these prices under the influence of different seasons. During January, weather conditions had little influence on futures prices of either of these grains. During April, wheat futures would be affected by weather conditions but not corn futures; during July both wheat and corn futures would be affected; and during August corn futures would be affected, but not wheat futures.

Simple correlation analyses were prepared and regression lines were fitted mathematically for each monthly series. The values of the coefficients of correlation, designated by r, and the slope of the regression lines, designated by b derived from these analyses are shown in table 1.

In every case except December futures in August 1937, the values of r were highly significant.[1] Changes in wheat prices were generally accompanied by somewhat smaller changes in corn prices. Relative changes in corn prices as compared with wheat prices are shown in the table in the column under the heading b. While there was much variation in the relationship between changes in corn prices and changes in wheat prices, in general the price of corn tended to change about 0.5 to 0.6 cent per bushel for each 1 cent change in wheat prices.

In some periods, such as July 1935, the condition of the wheat crop and its effect on wheat prices was definitely the major factor influencing the prices of all grains in the market. In other periods such as July 1936, rapid changes in corn prospects definitely appeared to have dominated all grain futures.

[1] "Highly significant" in this case is based upon Fisher's tables of significance, and means that an r as high as, or higher than the one listed would occur less than one time in one hundred entirely by chance from uncorrelated data.

TABLE 1. SUMMARY OF THE RELATIONSHIP BETWEEN DAILY CHANGES IN THE FUTURES PRICES OF CORN AND WHEAT

Year	Jan.				Apr.			
	May futures, no. of daily quotations	r	r necessary to be highly significant*	b**	July futures, no. of daily quotations	r	r necessary to be highly significant	b
1933	25	.781	.505	.358	24	.879	.515	.571
1934	26	.738	.496	.384	25	.769	.505	.609
1935	26	.945	.496	1.080	24	.571	.515	.432
1936	26	.709	.496	.424	25	.844	.505	.433
1937	24	.708	.515	.536	26	.539	.496	.603
1938	25	.512	.505	.180	25	.568	.505	.208
	July				Aug.			
	Sept. futures				Dec. futures			
1933	23	.926	.526	.640	27	.865	.487	.646
1934	25	.763	.505	.618	27	.801	.487	.699
1935	26	.601	.496	.238	27	.623	.487	.474
1936	26	.567	.496	.657	26	.740	.496	.841
1937	26	.699	.496	.582	26	.392	.496	.299
1938	25	.602	.505	.443	27	.675	.487	.621

* Derived from Fisher's tables on significance.
** Slope of the regression line or cents per bushel change in corn prices for each 1 cent change in the price of wheat.

In general, the correlations were highest for May futures during January, since during that month conditions were more stable, and futures were not influenced by crop prospects. The correlations were generally low when prospects changed rapidly for only one crop, such as for September futures during July 1935 and July 1936. In July 1935 wheat futures advanced sharply because of the rapid deterioration of the spring wheat crop. In July 1936 the corn market was influenced more than wheat by the drought.

The association between corn and wheat futures may be summarized as follows: First, there is a definite relationship between daily changes in corn futures and daily changes in wheat futures; second, changes in prospects for new crops appear to have an important influence on the degree of correlation between corn and wheat futures; third, there is no marked consistency between the correlation coefficients or the degrees of the regression lines in the same months of different years.

MALCOLM CLOUGH

Bureau of Agricultural Economics

AGRICULTURAL ADJUSTMENT AND MARKETING[1]

In the Wisconsin cigar tobacco industry, farmers growing tobacco were paid benefits by the AAA according to the volume of their tobacco enterprise. Actually the changes were no different than those the farmers would have made of their own accord. The farmer had already reduced his production largely as a voluntary measure, because he had received such low prices, or had not been able to sell his tobacco. The actual amount of reduction varied up to 100 per cent. The growers as a whole had voluntarily reduced acreage a third in the two years following the peak production of 1930.

In 1935, when practically all Wisconsin tobacco growers had signed contracts, their acreage was only 37 per cent of that permitted by their contracts. As a bonus for reducing acreage, the growers, received an average benefit payment of $58.37 per acre contracted to be taken from production.

In 1936 there was some expansion of production, and the base acreage for the individual was reduced approximately one-fifth. This showed that the administrators were trying to reduce the base to a point that would more nearly correspond with the actual acreage and, were attempting to prevent the recurring oversupply that took place when growers did plant all the acreage that their contracts permitted. The modifications for the 1937 crop were in the same general direction. It was necessary to grow tobacco in 1937 to be eligible for a base.

The selection of a base acreage is the key to the success of these control programs. To keep alive the democratic principle in base determination, particularly as long as the historical base is employed, the individual farmer can be as individualistic in voting for larger bases as he is in wanting everyone but himself to reduce production. This has been the history of base determination in the Wisconsin tobacco program. The original plans in 1933, based on the 1931 and the 1932 acreage, were moved back to include the larger 1930 acreage to win more popular appeal. Since then, plans to reduce bases have met with the producers' disapproval. The growers are inclined to favor only a base which recognizes their largest possible acreage, principally because the selection of one

[1] Based on a thesis submitted to the Graduate School of the University of Wisconsin in partial fulfillment of the requirements for the degree of Doctor of Philosophy, May 1938.

farmer's base does not show discrimination in relation to those given his neighbors. A base acreage determined from a peak year means that the proportion of reduction must be enlarged. If this proportion is too small or the payments for reduction are too thin, and if prices are reasonable,[2] the production will soon be excessive again. The point of view of the average grower is easy to understand. A large base means greater reduction payments and permits him to grow more tobacco when the price warrants it.

On the other side, the Administrators of this type of program try to interpret the demand for tobacco and provide for adjustment of production to meet that demand. For a declining demand the Administrators' only method must be supported by almost unlimited funds for benefit payments and for extensive administrative and compliance machinery. A declining demand is not peculiar to cigar tobacco but likewise characteristic of most of the export crops.

When a program incorporating democratic principles permits grower interests to choose the largest possible bases, and to favor large payments and also permits growers freedom to expand acreage, then the program can scarcely be termed anything but direct subsidy. The writer believes that the grower will favor only a program which enables him to grow as much tobacco as he is inclined to and which gives him a liberal payment in addition. With the historical base procedure for a crop of high acre value like tobacco, growers will grow considerable tobacco, not alone for the sale value of the harvested crop, but to maintain a sizeable base that will provide a liberal benefit payment. If a program is to adjust acreage artificially, the payments must be in proportion to the value of the crop acreage reduced. This method will provide incentive for continuing the tobacco enterprise as long as a tobacco base is received. There will be little urge to shift permanently or voluntarily to other enterprises when the programs will be planned with an aim of maintaining a parity income, either with high prices or with low prices, supplemented by benefit payments for each farm enterprise.

As has been learned from the AAA experience, the grower who voluntarily reduces production least, gets the benefit of larger payments and the best chance to keep a large volume of production to take advantage of price increases. This will mean that fewer

---

[2] Reasonable—at a level necessary to encourage the usual amount of production.

voluntary adjustments will be made and that the reduction programs will have to be even more stringent. There will always be the tendency toward overproduction of particular crops and the tendency away from voluntary adjustment. In fact, in the AAA of 1933, a penalty was actually inflicted upon voluntary efforts of adjustment.

To illustrate the AAA measures placed considerable hardship upon the members of the Northern Wisconsin Cooperative Tobacco Pool.[3] The AAA gave no recognition to voluntary reduction by growers. As a result, proportionately larger bases and benefit payments were given to the independent growers who had made little attempt to deal with the problem of high stocks and low prices by cooperative or voluntary measures. Furthermore, those who had the larger bases were able to grow more tobacco and take advantage of any price increases. Consequently today, the Pool has practically ceased operation because of the great decline in the volume of production of its members.

The new Agricultural Adjustment Act of 1938 attempts actual commodity control under marketing quotas only when the emergency of an oversupply occurs. This will make many of the normal adjustments easier than if production and individual marketing control were to be a constantly regimented program. Compliance will be easier and voluntary reduction will help to make a program, operating only in case of emergency, more effective.

Several difficulties still present themselves. It may be possible that the emergency characteristic of oversupply will become a permanent condition particularly when the amount of the commodity in excess of the quota must be held over to succeeding years by the individual grower.

Another problem concerns the accurate determination of the physical quantities of supply and consumption in the prediction of prices. Although prices are supposed to be determined by the fundamental conditions of supply and demand, the buying policies of various concerns, whether they are representatives of tobacco manufacturing companies, meat packers, textile manufacturers, or grain millers, are actually based upon practices that will yield the largest margins of profit. Stocks of raw materials or goods in proc-

---

[3] Wisconsin tobacco growers had organized the Northern Wisconsin Cooperative Tobacco Pool in 1922 as a sales agency to bring about more orderly selling on the basis of quality and fair prices.

ess will be enlarged either by buying in excess of actual manufacturing needs or by providing impetus for increased production so that the marketing quotas will be brought into force. With additional stocks built up, the amount of buying will be limited and the amount designated under the various marketing quotas will not be taken. As a result, considerable quantities will remain unsold in producers' hands and the amounts produced above the marketing quotas will still be held. This situation will renew the conditions of the glutted markets of 1930 and 1931. Buyers hesitating more than ever in buying will wait for the program to break of its own weight and flood the markets with commodities at bankrupt prices.

Criticism was heaped upon those who attempted farm relief by the methods of the Agricultural Marketing Act of 1929. Price stabilization and support of cooperative marketing organizations were labeled as only dealing with part of the problem of a maladjusted agriculture. Production control was apparently the missing link. The Agricultural Adjustment Acts of 1933 and of 1938 have emphasized production control as a farm relief measure, but still there appear serious limitations which may be summarized as follows: First, benefit payments have not corresponded with the actual changes in production. Second, accomplishments and functions of cooperative marketing associations have been ignored. Third, nature still retains a powerful influence over production in spite of the best conceived plans of acreage-control. Finally, much of the disparity in farm income is related to inelasticities in the profit margins and volume of business of concerns buying and processing agricultural products. The latter factor especially, needs greater emphasis so that production and marketing control on the farms will operate effectively.

Existing controls should not be criticized without suggesting alternatives that will be more successful. The various measures have one universal aim—establishing a balanced agriculture. The writer finds little agreement with those who would cast aside all types of control or regimentation as it is popularly termed. An unbalanced agriculture, in spite of argument to the contrary, can be balanced by reasonable human effort. However, factors affecting demand and marketing conditions are as important as the control of supply in determining the price of any commodity or the income for any group of producers. Therefore, whatever the details, a plan for providing an equitable income for agriculture must include

a well-rounded farmer program in production and marketing, plus a mechanism for coordination with the dealers and processors of agricultural products.

HENRY E. LARZELERE

Michigan State College

RECENT FARM LOAN AND REAL ESTATE EXPERIENCES OF FIVE LEADING LIFE INSURANCE COMPANIES[1]

Because of the large amount of farm land now under the control of life insurance companies and the relative importance of these insurance firms in the farm loan and real estate fields, farm real estate prices and farm tenure developments are noticeably affected by the acquisition and sales policies of the leading life insurance companies. In both the acquisition and sales of farm real estate, these companies are following widely different policies. It is in the differences of these policies that the significance of the following preliminary data is to be found. The purpose of this statement is to direct attention to these differences, especially to that which prevails in the sales policies of the companies.

The value of farm loan holdings of the five insurance companies covered in this study dropped from 913 million[2] in 1929 to 347 million dollars in 1937 (62 per cent) while the farm real estate owned rose from 37 million[3] to 292 million, of which 30 million was under contract of sale in 1937. Cumulated sales for the 5 companies amounted to 128 million or about 30 per cent of the total value of farms owned in 1937 and sold from 1929 to 1937. If the 30 million under sales contract is considered as sold, sales amount to 37 per cent. The graph which appears as an inset in figure 1 shows that acquisitions were largest in 1933 and 1934, while sales were largest in 1935. If the present trends of acquisitions and sales

---

[1] All data were taken from the companies sworn annual statements in the state insurance commissioner's office. Book values of farm properties were used in all cases except sales and acquisitions by the Northwestern Mutual in which case cost of properties was used. With the records of some companies it is impossible to separate farm from city properties. However, on the basis of farm loans outstanding Dec. 31, 1936, the five companies herein analyzed are all among the first seven most important life companies in the farm loan field, and held at the end of 1936 over 40 per cent of all farm loans owned by the 70 companies having more than $1,000,000 insurance in force

[2] The 1931 figure for the Metropolitan was used in arriving at this total.

[3] Excluding Metropolitan in 1929.

continue, the companies will soon begin a net reduction in farm real estate holdings.

The farm loan holdings of the Mutual Benefit Company have been reduced from 167 million to 51 million, a decrease of 70 per cent. The value of farms owned now exceeds the value of farm loans. At the close of 1937, 72 million in farm real estate was owned by the company or had been acquired and sold since 1929. Of this total, 22 million or 31 per cent had been sold or contracted for sale. Acquisitions were largest in 1933 and 1934, and though sales increased substantially after 1932, they were exceeded by acquisitions in every year under consideration. (Figure 2.)

The Metropolitan reduced its farm mortgage holdings from 182 million in 1931 to 70 million in 1937. At the same time the increase in value of farm real estate owned plus the value of farms acquired and sold (both together totalling approximately 78 million) accounted for about 70 per cent of the decrease in farm loan holdings. Acquisitions were largest in 1933 and 1934 and have been substantial since that time. But the sales policy of the company has been extremely conservative. Cumulated sales from 1931 amount to only 8 per cent of the value of farms owned in 1937 and owned and sold from 1931 to 1937 while cumulated sales plus value of farms under sales contract amount to only 13 per cent. The value of farm real estate is substantially in excess of farm loans, and acquisitions in 1937 were more than twice as large as sales. Unless the rate of sales is increased, some 30 years will be required for this company to liquidate its holdings assuming no additional properties are acquired. (Figure 3.)

The Northwestern Mutual (figure 4) reduced its farm loan holdings 135 million (62 per cent) from 1929 to 1937. On Dec. 1, 1937, the company owned or had owned and sold between 1929 and 1937 57 million in farm real estate. It is apparent that foreclosures accounted for considerably less than one-half the reduction in farm loans. Of the total acquisitions plus the small holdings in 1929, 42 per cent have been sold outright and an additional 12 per cent contracted for sale. This presents a marked contrast to the Metropolitan which has sold and contracted only 13 per cent.

The farm loan holdings of the John Hancock Company (figure 5) have followed the characteristic trend since 1929 having been reduced by 59 per cent. The 1937 value of farms owned and the cumulative total value of farms sold amounted to 81 million or 43

FIGURE 1

FIVE COMPANIES

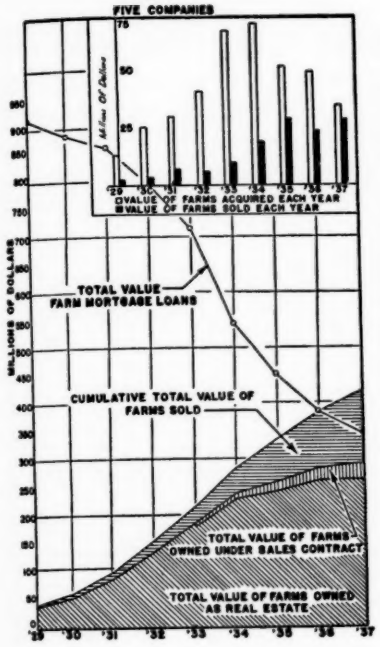

Millions Of Dollars
75
50
25
'29 '30 '31 '32 '33 '34 '35 '36 '37
VALUE OF FARMS ACQUIRED EACH YEAR
VALUE OF FARMS SOLD EACH YEAR
MILLIONS OF DOLLARS
TOTAL VALUE FARM MORTGAGE LOANS
CUMULATIVE TOTAL VALUE OF FARMS SOLD
TOTAL VALUE OF FARMS OWNED UNDER SALES CONTRACT
TOTAL VALUE OF FARMS OWNED AS REAL ESTATE
'29 '30 '31 '32 '33 '34 '35 '36 '37

FIGURE 2

MUTUAL BENEFIT LIFE INS. CO.

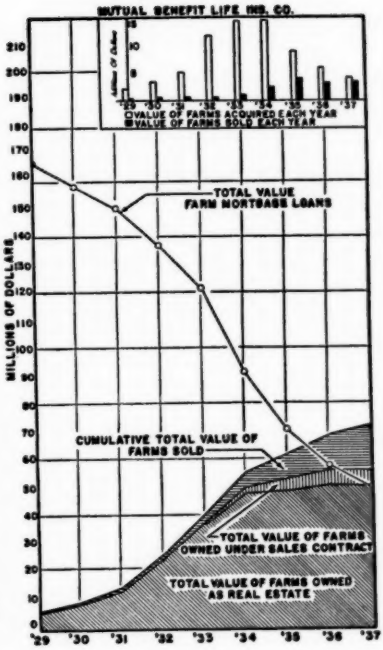

Millions Of Dollars
15
10
5
'29 '30 '31 '32 '33 '34 '35 '36 '37
VALUE OF FARMS ACQUIRED EACH YEAR
VALUE OF FARMS SOLD EACH YEAR
MILLIONS OF DOLLARS
TOTAL VALUE FARM MORTGAGE LOANS
CUMULATIVE TOTAL VALUE OF FARMS SOLD
TOTAL VALUE OF FARMS OWNED UNDER SALES CONTRACT
TOTAL VALUE OF FARMS OWNED AS REAL ESTATE
'29 '30 '31 '32 '33 '34 '35 '36 '37

FIGURE 3

METROPOLITAN LIFE INS. CO.

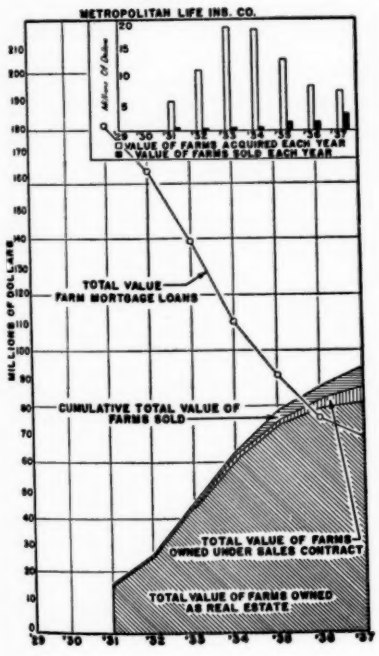
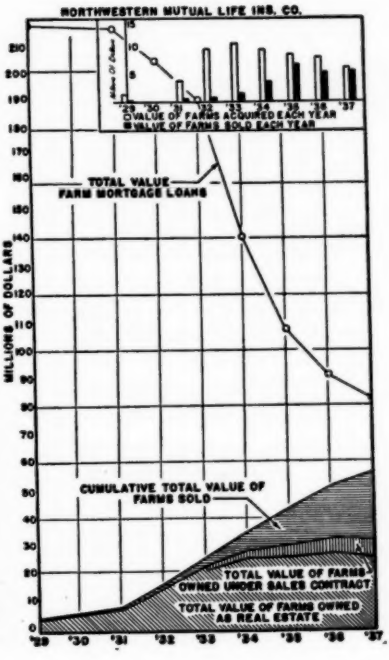

Millions Of Dollars
20
15
10
5
'29 '30 '31 '32 '33 '34 '35 '36 '37
VALUE OF FARMS ACQUIRED EACH YEAR
VALUE OF FARMS SOLD EACH YEAR
MILLIONS OF DOLLARS
TOTAL VALUE FARM MORTGAGE LOANS
CUMULATIVE TOTAL VALUE OF FARMS SOLD
TOTAL VALUE OF FARMS OWNED UNDER SALES CONTRACT
TOTAL VALUE OF FARMS OWNED AS REAL ESTATE
'29 '30 '31 '32 '33 '34 '35 '36 '37

FIGURE 4

NORTHWESTERN MUTUAL LIFE INS. CO.


Millions Of Dollars
15
10
5
'29 '30 '31 '32 '33 '34 '35 '36 '37
VALUE OF FARMS ACQUIRED EACH YEAR
VALUE OF FARMS SOLD EACH YEAR
MILLIONS OF DOLLARS
TOTAL VALUE FARM MORTGAGE LOANS
CUMULATIVE TOTAL VALUE OF FARMS SOLD
TOTAL VALUE OF FARMS OWNED UNDER SALES CONTRACT
TOTAL VALUE OF FARMS OWNED AS REAL ESTATE
'29 '30 '31 '32 '33 '34 '35 '36 '37

per cent of the 1929 farm loans. Thirty million or 37 per cent of this total was sold or contracted for sale. Annual sales were small until 1934 but increased substantially after that year. In 1937 sales exceeded acquisitions. But the Company still owns nearly 60 million in farm real estate and were the 1937 sales rate continued with no acquisitions it would take the company some seven years to dispose of its farms.

FIGURE 5

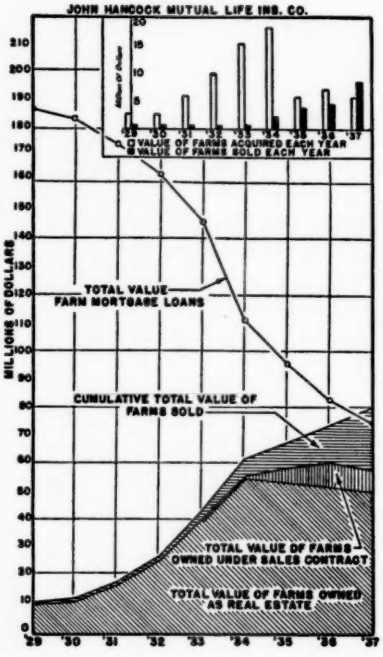
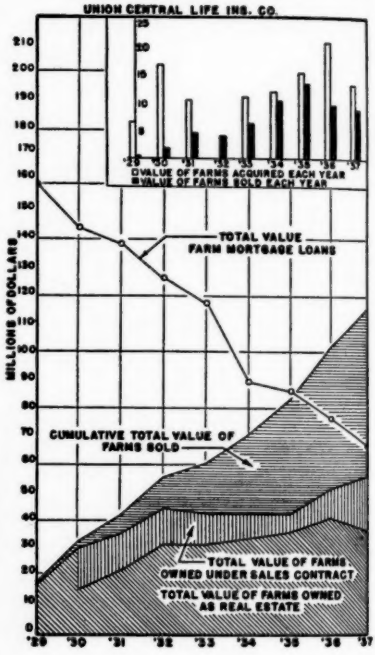

JOHN HANCOCK MUTUAL LIFE INS. CO.
MILLIONS OF DOLLARS
VALUE OF FARMS ACQUIRED EACH YEAR
VALUE OF FARMS SOLD EACH YEAR
TOTAL VALUE FARM MORTGAGE LOANS
CUMULATIVE TOTAL VALUE OF FARMS SOLD
TOTAL VALUE OF FARMS OWNED UNDER SALES CONTRACT
TOTAL VALUE OF FARMS OWNED AS REAL ESTATE

FIGURE 6


UNION CENTRAL LIFE INS. CO.
MILLIONS OF DOLLARS
VALUE OF FARMS ACQUIRED EACH YEAR
VALUE OF FARMS SOLD EACH YEAR
TOTAL VALUE FARM MORTGAGE LOANS
CUMULATIVE TOTAL VALUE OF FARMS SOLD
TOTAL VALUE OF FARMS OWNED UNDER SALES CONTRACT
TOTAL VALUE OF FARMS OWNED AS REAL ESTATE

In the Union Central statements it is impossible to separate farm from city properties in the annually acquired and sold series. However, the data on farms owned which includes only farm properties show that acquisitions have been substantial and that a large volume of farms have been sold under contract. If it is assumed that only half the cumulative total of real estate sold to the end of 1937 represents farm property, the farms sold and under contract of sale would equal 57 per cent of the farm real estate owned on Dec. 31, 1937 plus that acquired and sold from 1929 to that date. From this it would appear that the Union Central has

followed an aggressive sales policy. It is interesting to note that when cumulated sales are considered to be only half farm properties the volume of farms acquired represents 54 per cent of the 1929 farm loan holdings.[4]

The following table summarizes the farm loan and real estate experiences of the 5 companies:

Company	Percentage reduction in farm loans. Dec. 31, 1929 to Dec. 31, 1937*	Value of farms owned Dec. 31, 1937 and acquired and sold from 1929 to 1937 as percentage of 1929 farm loans	Value of farms sold and under sales contract as percentage of value of farms owned 1937 and acquired and sold 1929–1937
Mutual Benefit	70	43	31
Metropolitan	62	52	13
Northwestern Mutual	62	26	54
John Hancock	59	43	37
Union Central	58	54	57
Average	62	46	37

* Metropolitan figures are for 1931 to 1937 only.

J. H. DICKERSON

Iowa State College

ERRATA

In the note "A Special Case Consumption-ratio Formula for the Determination of a Limit on the Price Incidence of a Duty," by C. F. Wells and A. M. Du Pré, Jr. p. 854, this JOURNAL, November 1938,

for equation (2)
read:

$$\Delta y_d = \frac{y_d(\eta_f x_{df} - e_f x_{sf})}{y_d(\eta_f x_{df} - e_f x_{sf}) + y_f(\eta_d x_{dd} - e_d x_{sd})} \Delta T.$$

This correction does not affect any of the other equations or the results obtained.

[4] The area on figure 6 labelled "Cumulative total value of farms sold" includes in addition city real estate sold.

PUBLICATIONS RECEIVED

Bennett, M. K., *Seasonal Aspects of the European Wheat Trade.* Wheat studies of the Food Research Institute, Vol. XV, No. 6. March 1939. Stanford Univ., Calif, Food Research Institute, pp. 297–334. Price $.75.

Buros, Oscar Kirsen, *Research and Statistical Methodology, Books and Reviews, 1933–1938.* Reprinted from the 1938 Mental Measurements Yearbook. Rutgers Univ. Press, New Brunswick, N. J., 100 pp. Price $1.25.

Davis, Joseph S., *On Agricultural Policy, 1926–1938.* Stanford Univ., Food Research Institute, 1939. 494 pp. Price $3.00.

Drescher, Leo, *Entschuldung der Ostdeutschen Landwirtschaft.* Berlin, Reichsdruckerei. 88 pp. + 96 pp. tables and diagrams, 1938.

Hicks, J. R., *Value and Capital.* Oxford University Press, 1939, 331 pp. Price $4.25. (Reviewed in this issue.)

Hill, George W. and Ronald A. Smith., *Rural Relief Trends in Wisconsin from 1934 to 1937.* Univ. of Wisconsin Press, Madison, Wis., 1939, 57 pp. Price $1.00.

International Institute of Agriculture. *International Bibliography of Agricultural Economics,* Vol. 1, 1938–1939. Int'l. Institute of Agr. Rome, 1939, 137 pp., $1.60 per year. With this issue, the International Institute of Agriculture begins the quarterly publication of a current bibliography of agricultural economics. This is to be a systematic, world wide bibliography on economic and social aspects of agriculture and is carefully classified by subjects.

King, Willford I., *The Causes of Economic Fluctuations.* Ronald Press, New York, 1938. Price $3.50.

Mukherjee, B. B., *Agricultural Marketing in India.* Thacker, Spink and Co., Ltd., Calcutta, 1937, 259 pp. Price Rs 4/8.

Waite, Warren C. and Ralph Cassady, Jr., *The Consumer and the Economic Order.* McGraw-Hill Book Co., New York, 1939. x+389 pp. Price $3.50. (Reviewed in this issue.)

REVIEWS

Value and Capital, by J. R. Hicks. Oxford and New York, Oxford University Press, 1939. Pp. xi+331. $4.25.

In the first two parts of this book, Dr. Hicks achieves the triumph of a complete and up-to-date statement of the central doctrine of the "mathematical school" of theorists, without the use of mathematical symbols—which are confined altogether to a brief appendix—and with only the simplest of diagrams. The theory of consumers' demand in its modern form, purged of all dependence on assumptions of quantitatively measurable "utilities"—as worked out in the pioneer articles of Dr. Hicks and R. G. D. Allen in *Economica*, in 1934[1]—is set forth in 52 pages; and the theory of "general equilibrium" in 56. Neither of these passages has been "simplified" for the use of beginners by omitting essential links of reasoning; but they are so clearly worded and so straightforward in arrangement that they should be helpful to most students of economics who are past the elementary stage. If Dr. Hicks had stopped with this first third of his book, he would already have provided his colleagues with an invaluable reference book, and with a summary of the highest value for teaching purposes.

Parts III and IV, however, which make up the bulk of the book, go further and take up the problems of "dynamic economics," in terms of expectations and of plans laid by business men and consumers. These problems, of course, are new and unsettled. Serious discussion of them can scarcely be traced back of F. H. Knight's *Risk, Uncertainty and Profit* (1921) and has been confined almost entirely to articles and scattered passages. Dr. Hicks's analysis is both the most extensive and the best organized so far. His healthy conservatism leads to a useful adaptation of established "static" methods—neither burdening us with the excess baggage or traditionalism nor wasting our energy in fruitless excursions into all the innumerable blind alleys of exploratory innovation. In particular, it saves for us the tool concept of equilibrium of the firm.

The introductory chapters of Part III (IX and X) are models of methodological discussion; and the chapters on the planning of the firm (XV–XVII) are nearly as perfect on their level—that of a first approximation, assuming perfect competition and perfect

[1] A Reconsideration of the Theory of Value. Economica, 14: 52–76, 196–216. 1934.

certainty—as those on consumption in Part I. Chapters XI–XIII, dealing with interest, will help students of the Keynes controversy; though they leave the role of "productivity of capital" out of the discussion. Chapters XX–XXII, on the "Temporary Equilibrium" of the whole dynamic system, are intensely stimulating; but the reviewer is unable to decide, without further reading and reflection, whether they really succeed in showing the applicability of notions of general equilibrium to problems of change.

The chief defects of the book are two major omissions—in regard to uncertainty and to market imperfections. Since every book must stop somewhere, it may be unfair to tax Dr. Hicks with drawing the line here. But one of his chief concerns in the book is to integrate the theory of money with the general structure of economics; and Dr. Hicks himself has done much to make it clear that the demand for money results largely from uncertainty.[2] It can also be shown—though not in the space available for this review—that market imperfections, in particular imperfections of the capital market, have much to do with it.

Dr. Hicks's official disposition of the uncertainty problem is definitely unsatisfactory. He argues, for example, that for the prospective seller of goods increased uncertainty about the future price "will have the same effect as a reduction of the expected price" (p. 125). This implies the heresy of G. L. S. Shackle[3] that a constellation of uncertain anticipations is for an entrepreneur "the equivalent *as an incentive to action* of some particular quantity which he could expect with *certainty*." This is definitely incorrect. To illustrate, a business man who had certainty (who thought he knew just what the future was like) would not buy fire insurance, would hold inventories only for the sake of bulk purchasing, would hold cash balances only to impress his creditors, and would lean abnormally toward specialized equipment. Dr. Hicks has seen this point very clearly;[4] but he has not seen it in its general bearing on the problem of business planning, and in consequence his theory of money appears unnecessarily isolated from the rest of his structure.

Readers who insist on finding information as well as analysis

[2] See his Proposal for Simplifying the Theory of Money. Economica, 1935.

[3] Expectations, Investment and Income, p. 19, Oxford and New York, 1938, (italics Shackle's).

[4] For instance, he says that "it is uncertainty of the future, and *the desire to keep one's hands free to meet that uncertainty* which limit the extent of forward trading" (p. 139; my italics). The specific reaction to uncertainty could scarcely be better described.

between every pair of covers may be disappointed; but those interested in institutional studies would do well to ponder the introductory chapter of Part II (pp. 55–61) on the range of application of general equilibrium, the analysis of futures markets in relation to social planning (pp. 135–139), and the discussion of price-rigidity in relation to sensitivity of price expectations (pp. 280–281).

To view a new book with full perspective is of course impossible; but the reviewer ventures the guess that Dr. Hicks's book will rank as the most important theoretical work in English at least since the books of Professor Chamberlin and Mrs. Robinson on imperfect competition, possibly since *Risk, Uncertainty and Profit*. Certainly it is a book which every economist can profit by reading.

ALBERT GAILORD HART

University of Chicago

Industrial Price Policies and Economic Progress, by Edwin G. Nourse, and Horace B. Drury. Washington, D. C.: The Brookings Institution. 1938. Pp. xi+314. $2.50.

Industrial Price Policies and Economic Progress is a follow-up of the institution's four-volume exploratory survey of distribution of wealth and income as related to economic progress. The earlier study attempted an appraisal, both factual and theoretical, of the economic system under which business operates in the United States. This book discusses specific cases and aims to picture concretely and realistically the factors which enter into the determination of practical industrial prices of the modern age.

The thesis is advanced that in the interest of economic health gains in efficiency should be shared with consumers. While prices of wages and raw materials present important issues the study is specifically limited to the process by which all segments of the population may be benefited by price adjustment and the influence that this process of distribution may have on production. The discussion centers on the average level and trend of prices over several months or years in its relation to conditions of productive efficiency and the development of the consumer market. Possible remedies for depression are not considered. Rather, emphasis is placed on the continued preservation of sound economic health.

Only "administered" prices are discussed. These are prices "established by the decision of executives who have power to decide in advance the price at which goods shall be sold and to back that

decision by expanding or contracting operations in volume large enough to have a significant effect on the market." The authors demonstrate that administered prices are not necessarily "harmful."

The concluding four chapters emphasize the organizational factor and the different methods in which executive function may be made effective through price policy in determining the course of modern industry. About 1900 there existed large combinations in several commodities which tended to charge all the traffic would bear but the authors hold that the would-be monopolist of today is in danger of defeating himself for "The chemist will build a detour around him, the physicist will drive a tunnel under him, or a biological overpass will be devised." Here we find the economist's "principle of substitution" at work.

Regulation of industry by trade associations or by direct government action do not dispose of the price problem envisioned by the authors because both tend to be negative. They may set brakes at certain points in the pricing process. When wisely directed this may be helpful but gives to the pricing process no active power of contributing to economic progress. For this purpose there is needed action to serve consumers which springs from the ambition of one or more individuals striving to blaze new trails. Pricing is no longer accomplished in the process of sale. Instead of price determination by cumulative cost computations a dynamic approach is needed. This starts with the consumer's want and purchasing power and aims to supply his needs within the limits of his purchasing power.

Economic considerations as well as technological requirements make larger units necessary in modern industry. The business executive must study the nature and elasticity of demand and related problems as well as chemistry. Small-scale competition has for technical reasons been so largely forced from our system that we cannot depend upon it as a regulator. To return to it would not be progress. To conserve benefits won, the new power of large-scale organization should be turned into constructive price making channels rather than destroyed.

The hugeness of some modern corporations has by no means ended the era of competitive capitalism for the authors assert (p. 270): "Competition is quite as keen and much more productive of results when we find industrial giants marshalling their mighty

resources to perfect new techniques and new schemes of organization through whose use more and better goods may be put within reach of the masses." Examples cited are "three giants" in automobiles, chemical companies, great mail order houses and others.

One who engages in business is truly an inventor and the dynamic center of all activity in business whether he creates a new mechanical process, develops new forms in organization and management, or institutes a new price policy. In the complex industrial system of today there is clearly less of individual enterprise and larger concentration in the hands of officials of corporations. These officials must furnish employment to those who can no longer provide self-employment so that they may satisfy their needs. A sound pricing system thus develops capacity operations and implies full employment of all of the workers of the nation. Although industry during periods of inactivity avoids direct payments to labor by reducing its labor force it does not escape outlay for relief and extra police protection, and training of new workers.

The inductive development of a positive theory of pricing industrial goods in a changing world has been effectively demonstrated. The book reads easily. The work is well proportioned and the emphasis well placed, although the authors frankly admit, as in the case of steel, that not all important areas in the industrial field have been adequately covered. The type of price adjustments necessary to achieve maximum production continuously for the benefits of stockholders and all other participants are presented in terms of experience of businessmen who have found ways of organizing production so that wants of workers who produce goods are satisfied within the limits of their purchasing power. Those concerned with economics and public welfare should find the discussion of Nourse and Drury most stimulating. It is to be hoped that many industrial leaders will read it carefully and endeavor to apply its lessons of "economic statesmanship" for one of the shortcomings of capitalistic organization is its failure to administer the pecuniary part of the system so that labor is enabled to work as fully as it may wish in satisfying its wants.

SAM. H. THOMPSON

Iowa State College

Consumers and the Market, by Margaret G. Reid. New York: F. S. Crofts & Co., 1938, pp. xvi+584, $3.75.

Food Buying and Our Markets (new edition). Day Monroe, Hazel

Kyrk and Ursula B. Stone. New York: M. Barrows and Co., 1938, pp. x+430, $3.00.

These two books are evidence that the problems of the consumer are becoming a subject for even closer study. Dr. Reid's book is a careful, detailed analysis written "to help consumers." It considers problems of practical interest and vital importance to this group. Describing buyers as "users of goods," Dr. Reid emphasizes the fact that the consumer is slowly becoming articulate, but still is aware only of the goods in the market. The economic system on which the retail market is based is a "mystery." She attempts in her study of the market to present two viewpoints: first, "the immediate, highly individual problem of getting the most for the least cost," and second, "the market system as a whole." It is important, she feels, that consumers recognize the powerful conditioning of the "American standard of living" on their demands and choices. This standard fundamentally affects the behavior of each consumer. The basis of choice lies far beyond the mere buying of a given commodity in the market. Rather, it depends upon the basic philosophy which the consumer possesses. If one knows what he wants from life, and has a full knowledge of what life has to offer, his choices form a pattern in complete agreement with his goals. But this is the ideal attained only by those with "much zest and purpose in life."

Beginning with the characteristics of a "good" market, Dr. Reid discusses the market organization, the problems of retailing, costs, selling. She offers an exceptionally fine discussion of the chain store problem. The respective advantages of the chain store and the individual merchant, together with the social implications of the supremacy of each, are described in statistical detail.

Among the alternatives presented should the chain store be taxed out of existence, a possibility threatened both by state and by federal law, is consumer cooperation, which is the natural expression of the "belief that consumption is the end and purpose of production." Consumer cooperatives have been relatively unsuccessful in America, Dr. Reid feels, because of the conflict within the movement between those wishing to use the cooperative to buy more cheaply and those wishing to use cooperation as a basis for a new economic society.

The author devotes considerable space to the need for consumer resistance and the ways by which it may be built up. The con-

sumer's slogan might indeed well be "Less salesmanship and more buymanship!" Particularly telling is her treatment of advertising and her evaluation of the control over it exercised by consumers' purchases, government agencies, and trade associations.

The difficulties of effective labeling and of setting up adequate standards for products is no doubt one of the big problems of the untrained consumer. Very little has yet been accomplished to meet this need, but a variety of agencies and groups are doing pioneer work in this direction. Dr. Reid concludes that the rising interest in consumer education has three particular aspects—choice making (training to get more for one's money), market selection (training to buy with minimum time and effort), and the consumer's part in public policy (improvement of the market). Certainly it seems to be true, as Dr. Reid indicates, that while an individual consumer has small influence, yet a "real" consumer movement, free from bias, would have the power to demand detailed, accurate information and the production of articles that the consumer wants. She must feel that "through action, improvement is possible."

The book by Miss Monroe, Miss Kyrk, and Miss Stone is not concerned with meal planning or food selection from a nutritive standpoint, but deals "entirely with the economic aspects of food purchase." Part I discusses the market in similar fashion to the book of Dr. Reid's, but in less detail; Part II is a practical dictionary of foods, with aids on how to buy, what to buy, when to buy. All of the common foods available in the retail market are listed, and discussed with careful instructions for getting one's money's worth. Because of the economic importance of food in the national budget, the authors feel justified in making this the subject of their careful study. Their definition of a "perfect" market differs from Dr. Reid's only in that it is somewhat less inclusive, leaving out any discussion of sales pressure, protection, wants; but the essentials of both are the same.

With this "perfect" market as an ideal, the authors throw against it in bold relief the current retail food market, following this with discussion of the chain stores and the consumer cooperatives, each of which offers it peculiar advantages. The costs of marketing and retailing show the lack of improvements in "internal" economies as contrasted with "external" economies, or "those in the system as a whole." *Food Buying* especially em-

phasizes that improvements "in the efficiency within the marketing unit" have been very scattered. Both the chain store and the cooperative seem to present certain means of efficiency through the "large scale of their operation, through buying specialists, and through integration."

One of the more serious difficulties with which consumers have to contend, according to the authors, is the real lack of adequate protection under the law for her grievances—dangers not only to her purse, but to her health. The Copeland Bill, amending the Food and Drug Act, would but partly plug up the holes made apparent in the past decades of attempted enforcement.

Food Buying and Our Markets, although more limited in scope than *Consumers and the Market*, yet furnishes a practical guide to the buyer of foods. While giving her a specialized aid to purchasing, it also lays a foundation for a broader knowledge of the market and its workings. Both texts offer sound workmanship and scientific analysis of some of the major problems confronting the consumer —confused by the lack of specialized training in the job she has to do, influenced by advertising which misrepresents or at least "glorifies" the products offered for sale, only partially protected by the laws of her government. In both there is an unusually happy use of statistical charts which give in graphic form much that it would be difficult to present as effectively through verbal explanations. Yet adequate discussion is afforded to prevent misrepresentation. As Dr. Reid says, "The consumers are guinea pigs." It is only through intelligent and conscious effort on their part that they can profit from these experiments made upon them. From such studies as these, it is apparent that thinking on consumer problems is making substantial progress in a most promising direction.

J. M. CASSELS

Stephens College

Income and Consumption, by Roland S. Vaile and Helen G. Canoyer. New York. Henry Holt and Company. 1938. Pp. xv +394. $2.25.

The 351 pages of discussion in this book should prove to be a worthwhile addition to the growing body of literature on the theory and facts of mass consumption, for the emphasis is on consumption rather than on income. In other words, it is mainly a discussion of how various incomes are spent.

The book is divided into three parts which cover respectively "The Existing Economic Order" (pp. 1–85), "Present-Day Consumption" (pp. 86–245), and "The Chances for Improvement" (pp. 249–352).

As to purpose, the authors say:—

"This book is written particularly for those who have an alert curiosity about political-economic-social questions, but who have not yet had opportunity to examine broadly the relationships in these fields. Our purpose throughout is to state problems as clearly as possible, and to weigh evidence for and against various proposals. We believe there is seldom one completely right solution to human affairs, with all other solutions wrong, as might be the case with a simple problem in arithmetic. Consequently our aim has been to avoid indoctrination, to encourage thoughtful consideration, and to develop tolerance."

Although the aim is simplicity, the language is not confined to one-syllable words and often leaves much to be desired for persons not accustomed to textual sorts of books and economics. It does, however, go a long way in the direction of simplicity by presenting a wide variety of data from recent studies in its sixty-one tables and fifty-one charts.

In addition to a substantial bibliography (pp. 353–361) there are ample references to sources from which data are taken particularly in connection with the various charts and tables.

H. E. ERDMAN

University of California

American Regionalism, by Howard W. Odum and Harry Estill Moore. New York: Henry Holt and Company, 1938, pp. x+693, $5.00.

A composite major societal region may be distinguished by a relatively large degree of homogeneity among a large number of indices. Such a region, according to Messrs. Odum and Moore, should be studied as a social *Gestalt* and as a constituent part of the whole nation. A new and rapidly developing science of the region, called regionalism, may offer techniques needed to introduce balance and equilibrium, distribution and decentralization into our American society, particularly in respect to problems of population, wealth, and sovereignty.

Regionalism must replace sectionalism. In the words of Stuart

Chase, "A region provides a basis for economic planning, a section a basis for political uproar." As Frederick Jackson Turner has shown, sectionalism is important to the understanding of American institutions. Likewise, as the authors show, it aids us in determining modern regions. In the future, however, we must build a national culture upon regional diversity, with each region developing a program of social and economic improvement which is in harmony with national interests.

Between the sovereignty of the states and the federal government there is a legal no-man's-land. The states are impotent to deal with problems of regional importance, just as they are often unable to rule their great cities. Attempts to secure uniform state legislation and interstate compacts have not bridged this great gap. The fact remains, however, that there are forty-eight states organized as going concerns and with legislative powers. States, therefore, must be the key units in any regional division. On a group-of-states arrangement, Odum and Moore designate six major societal regions for America: the Northeast, Southeast, the Middle States, the Southwest, Northwest, and the Far West.

Of the several types of natural regions, the best for planning purposes are river valley systems. Since watersheds do not coincide with either cultural areas or state lines, they do not meet the requirements for major regions, but they do provide effective units for subregional planning.

On the subregional level, technical and specialized planning (for land, water, minerals, transportation, wildlife) and general economic planning can be done. A different level of planning is the administrative-functional which involves a hierarchy of planning boards from the local to the national. These two levels join on a regional basis. The description of the regional planning board, given in the last chapter of Part I, is an anti-climax. The regional board is to consist of a representative of each state planning board and the national board, two representatives of the region-at-large, and a representative of each subregional, technical planning agency in the area. This is to be the implementation for American regionalism: "even more advisory and general than the others," these regional boards are to be "less formal and less active than the national and state planning boards," with a "relatively small staff," and meeting "perhaps not more than twice a year," and "with no powers whatever." Certainly if regionalism is to be ex-

pressed through an agency with these limitations, we may safely relax the watch which the authors feel is needed lest "the regional planning movement may be used subtly and subserviently in changing the American system."

Agricultural economists will be especially interested in the discussion of rural cultural areas. "Agricultural regions," the authors note, "do not coincide with the physiographic, climatic, or soil regions of the nation." Some emphasis is put on the expanding concept of "rural" and on the changing character of rural areas, which is particularly important in view of the recent tendency to consider "rural" rather than "farm" or "agricultural" problems. (See, for instance, the preliminary report of the Social Science Research Council Subcommittee on Lower-Income Rural Classes.)

Geography, ecology, political science, sociology, anthropology, and economics all have turned towards the study of cultural areas. The economist may choose the "simplified but clear path" of price economics, or he may "plunge into the wider field of social implications" and social objectives.

Regionalism provides a great opportunity for sociology which will undertake the "synthesis of regional studies and concepts." The authors' definition of sociology is so over-generous that it certainly does not clarify the place of the other professional groups discussed, and more particularly of the engineers who are given no mention although they make up a sizeable portion of existing planning boards, which the authors imply will be the backbone of the regional planning movement. It is pointed out that geography has moved from the physical to the social science group, yet there is no reference to those physical scientists in engineering, medicine, architecture, and forestry who have lately been showing a growing concern over the social and economic aspects of their technical problems.

Some of the many claims for regionalism may seem to be more wishful than realistic, such as the line of distinction between the sectionalism of the past (and present?) and the regionalism of the future. But that is not the point. With the vast number of admittedly unsettled problems which we have to face, no one can excuse himself from attempting to test this new approach and to determine what contribution it may have to make.

Likewise, some readers may interpret regionalism as an academic pastime of drawing lines and coloring maps. No matter how many

so misinterpret the concept, there is still the opportunity and need for serious students to probe basic problems with this theory as a point of orientation. Those who are interested in research as a basis for public policy will want to study this book and to proceed to subregional analyses and the even more difficult problems of regional study and program building.

LEONARD A. SALTER, JR.

Bureau of Agricultural Economics
New Haven, Connecticut

Economic Nationalism and the Farmer, by Arthur C. Bunce. Ames, Iowa: Collegiate Press, Inc., 1938, pp. x+232, $1.50.

This timely little book is an outgrowth of the author's doctoral thesis, developed under the acknowledged guidance of Professors Hobson and Hibbard of the University of Wisconsin, whose Tariff Research Committee has produced an expansive family of agricultural commodity tariff studies. Dr. Bunce's monograph purports to be "an analysis from the standpoint of the farmer of the arguments"—both historically and currently advanced on behalf of American economic nationalism—"and an attempt to present the probable results to the farmer of a further development of economic nationalism, whether it is the result of a foreign policy definitely planned to achieve an 'America Self-Contained,' or whether it is the result of a gradual drifting into isolation due to a continuance of the traditional tariff policies of the past."

Beginning with an historical review of the polemics and politics of the perennial issue of the farmer and the tariff from the 1828 "Tariff of Abominations" to the Smoot-Hawley Tariff of later abomination, the author traces the persistent growth of the "price parity concept" during the twenties, intensified by the Great Depression of the early thirties, and analyzes the economic nationalistic implications of the various attempted or proposed methods of attaining it: dollar devaluation, production controls, parity payments, price fixing, export subsidies, etc. Chapter IV presents and discusses Republican criticisms and counter-proposals to the Reciprocal Trade Agreements program and reviews the Peek-Hull controversy over the issue of bilateral trade balancing and the unconditional most favored nation principle. Chapters V, VI and VII, constituting over a third of the book, are devoted to a résumé and critical analysis of the Garvan-Hale-Crowther arguments for "America Self-Contained." The heart of the study lies in Chapters

VIII and IX, in which an attempt is made to indicate the cost of economic nationalism to the farmer as producer and consumer. The final chapter, captioned "National Planning and Foreign Trade," is introduced on the theme that "the foreign policy of a nation is merely an extension of its internal policy," but dissipates itself in an admittedly inadequate, and to the reviewer, gratuitous presentation of various forms of social control (socialism, modified capitalism, Keynesian monetary and interest rate management, cooperativism, etc.).

Dr. Bunce's study affords a useful and timely service in reviewing the contemporary literature and forensics of American economic nationalism and in examining the implications of recent farm relief measures and proposals. The piecemeal discussion of the various plans for attaining price-parity for agriculture and of the specious arguments for American Self-Containment involves, however, the running up of numerous controversial alleys and the firing of scattering shots at a diversity of nationalistic planners and pressure groups. While this is perhaps a necessary exercise, the effect tends to be rather diffused.

The author deserves credit for confronting the prolific propaganda disseminated by the Chemical Foundation which with star-spangled patriotism offers to deliver America from its external dependence, and for taking issue with the Farm Chemurgic fanatics who promise a "scientific" solution to the farm surplus problem—at the price of prohibitive tariffs and subsidized substitution. Bunce's comments, however, take the form mainly of questioning certain statements, suggesting other considerations, quoting other critics or citing other findings. While it is apparent that he believes that the experiments and proposals for artificially achieving parity or stability in one area serve to generate more serious maladjustments and conflicts, one is conscious that the counter-offensive is not pressed home with either the vigor and liberal conviction of an Edminster or with the subtle exposure of a Hibbard that puts the nationalistic planner on the defensive.

In attempting to indicate "What economic nationalism means to the farmer" the author emphasizes the following familiar dilemmas. (1) Restricting imports means further curtailing production of export crops, and withdrawal of land from such established use inevitably means greater domestic competition for producers of those agricultural products on which the tariff has been

more or less effective, and this tendency has already led the dairy interests to demand artificial curbs on potential domestic as well as actual foreign competitors.[1] (2) Attempts to raise farm prices by further import restrictions are likely to be neutralized by stimulating further production, or if the latter is artificially held in check, by diminishing domestic consumption. (3) The gaining of higher tariff protection for agriculture involves the giving by farmers of political support for increased protection for manufactures (as the dairy interests have aligned themselves with the chemical interests) which makes the attainment of price parity still more elusive. (More might have been made of the case for selective lowering of industrial tariffs as probably the most effective means of countering the tendency towards monopolistic and rigid nonagricultural prices which the author believes to have been the major cause of the depression, p. 143.) (4) Attempts to elevate farm prices by curtailment of production or self-containment, or to augment farm incomes by subsidies derived from taxation of consumers, all imply the quest for questionable stability at the unquestioned cost of reduced real national income. (5) Price-fixing for agriculture inevitably involves an indefinite extension of regimentation of the farming business and the intensification of conflicts, not only between agriculture and labor, but also among farm groups themselves.

The author gives but limited attention to the movement which appears to be gaining increasing momentum for a dual price system, or even a triple price system (parity price for farm products sold through ordinary domestic channels, a reduced class price for low income groups or unemployed, and a dumping price for surpluses sold abroad). The only argument raised against the latter is the likelihood of countervailing measures by foreign countries (pp. 74, 94). It might also have been pointed out that price-cutting in itself is ineffective in expanding agricultural exports to countries administering import quotas or pursuing a policy of strict bilateral trade balancing; and attention might have been called to the national cost of taxing ourselves to present bargains to foreigners and to the competitive consequences of permitting foreign manufacturers to obtain agricultural raw materials at lower prices than our own manufacturers.

[1] The "inward turning" manifestations of protectionism in America are strikingly and circumstantially revealed in R. L. Buell's article, "Death by Tariff" in the August 1938 issue of "Fortune."

On the whole the contribution made by Dr. Bunce's book appears to lie mainly in the conveniently arranged review of the polemical literature of economic nationalism and the tariff as applied to agriculture. One finds few original statements presented in a language and style which invite quotation.

HARALD S. PATTON

Michigan State College

Entwicklung der Selbstversorgung Deutschlands mit Landwirtschaftlichen Erzeugnissen (Progress in Germany's self-sufficiency in agricultural products) by Hans v. d. Decken, Institute for Business Research, Berlin. Berichte ueber Landwirtschaft, Neue Folge, Sonderheft 138, Berlin: Verlag Paul Parey, 1938, pp. 152, Rm. 11.60.

This book is a study by an agricultural statistician of Germany's present supply situation with regard to agricultural foodstuffs and raw materials. It is intended to provide the statistical background for a more comprehensive study of Germany's agricultural supply problems and their solution.

In the first part of the book the author presents a computation of Germany's harvested plant production in basic nutrients. His findings are that, of the total production during 1935 and 1936, which amounted to approximately 200 billion calories, 20 per cent are utilized directly through human consumption, 65 per cent are used as feed for livestock and draft animals, and 15 per cent consist of seed, losses in processing or preparing, shrinkage, waste, etc. Domestic production is supplemented by the importation of 20 billion calories in foodstuffs and feeds. Since, however, most of the foreign supplies are imported in a "concentrated" form and would require an original production of approximately 35 to 40 billion calories, the author estimates that as a whole the present consumption of foodstuffs in Germany is covered only to 80 per cent by domestic production. The human consumption of plant and animal foods in Germany in 1936 is calculated at 72 billion calories of which nearly 20 per cent were imported as food or produced domestically from imported feeds.

Following this general survey of food supply and consumption, the author in the second and major part of the book discusses production and consumption of individual foodstuffs. In his computation of total consumption in terms of calories he finds that during

recent years the daily consumption of calories per adult person has not reached the level obtained during the pre-war period 1909–1913, nor that during the three-year period 1927 to 1929. In the discussions of domestic production and imports of agricultural raw materials, it is estimated that of the available supplies of all raw materials combined only 47 per cent are produced domestically.

In the third part of his book dealing with Germany's dependence upon imports of foodstuffs and raw materials, the author states that, in spite of remarkable progress in food production, domestic supplies, particularly of fats and proteins, are still quite insufficient. When one considers that the optimum of food consumption has not been reached by all classes of the population nor at all seasons of the year, the dependence upon foreign supplies is much greater than calculated. The progress made in the production of raw materials since 1927 has been not so much an increase in agricultural production as an increase in the industrial production of substitutes chiefly from waste materials and wood.

In the concluding part of the study a short discussion of Germany's future requirements of agricultural products is given. Because of the uncertainty as to the future trends in population, size of family, purchasing power, and government influence in directing consumption, no estimate of future needs is made.

The greatest difficulty which the author is facing in his study is the inadequacy or lack of necessary statistics and information on consumption. Fairly reliable statistics are available only for commodities which are reported periodically for revenue or other purposes. For the most important agricultural products such as bread, potatoes, milk, etc., consumption is calculated from production estimates allowing for certain reductions. Frequently the available information had to be further supplemented by rough estimations. The author in most cases recognizes the difficulties involved in his calculations and cautions against an indiscreet use of the results.

Because of the great variations in the consumption of agricultural products in the various regions of the country, in rural and urban districts, and between different income groups, the results are at best a theoretical average which may be of value in following the trend in the consumption of individual foods for which reliable statistics are available or in comparing the consumption of major foods in different countries. Although the author presents a

comparison of the calculated consumption and theoretical requirements on basic nutrients per adult person, this does not disclose whether the food supply of the German people as a whole is adequate. Neither does the book show whether the supply of other raw materials is sufficient to provide for present needs or whether raw materials formerly imported have been displaced by domestic substitutes at a loss in quality.

The book is interesting and informative. It contains much statistical information of interest to the American reader who wishes to take a glance at the supply situation for certain foods and raw materials in Germany. The careful research worker may wish more detailed explanation and discussion of the methods used in the course of the investigation.

H. H. STIPPLER

Division of Marketing and Marketing Agreements
U. S. Department of Agriculture

The German Fat Plan and Its Economc Setting, by Karl Brandt. Stanford University, California: Food Research Institute. 1938. Pp. xiii, 344. $3.00.

In the past, Germany has relied on external sources for approximately half her fat supplies. The experiences of the World War and the self-sufficiency ideals of a totalitarian state are incompatible, however, with the continuation of such a policy and in consequence every possible effort is now being made to close the so-called fat-gap. The attempt is worthy of close attention. Self-sufficiency would further restrict world trade in fats with perhaps some influence on our own market. Certainly, significant lessons are to be learned regarding governmental controls in agriculture since this has probably gone further in Germany than elsewhere. Dr. Brandt is especially qualified to discuss and evaluate these developments since he was closely connected with the plans in their inception and has been able to follow them thru contacts with former students and colleagues even since coming to this country. The book is an illuminating discussion of the entire fat and oil economy of Germany and of an experiment of first magnitude in agricultural control.

In 1934 German fat consumption was around 2.1 million tons, of which 1.1 million tons was domestically produced. This domestic production was principally animal fats, cattle largely thru butter-

fat providing about two-thirds of the total, and hogs most of the remaining third. Goats and domestic oil seeds provided most of the relatively small remainder. The imported supplies were largely vegetable oils, although there were also important importations of lard. The fat-gap is thus one of considerable magnitude and the task of closing it enormous.

The nearly complete control of agriculture and its marketing provides the mechanism. The Reichsnährstand is a compulsory cartel, embracing the economic sectors of agriculture, forestry, horticulture, fisheries, and game preserves. Every person or enterprise engaged in the production, processing, converting or distribution of milk, fats and dairy products is, by law, a member of Branch 7 of the Food Cartel and belongs to one of its regional units. Prices are fixed to the farmer and also thru the wholesale and retail markets to the consumer. The old cooperative organizations have been replaced by governmental bodies. Private organizations have lost their flexibility and quotas have become important devices in control.

In all this the dairy farmer has fared rather well. An increase in butterfat production is apparently a central plank in the program. Prices have been set considerably above levels in the world markets and at a height designed to expand butterfat production. The competing margarine industry has been severely restricted. Both the margarine industry and the oil mills have been placed under government control and subjected to production quotas. These quotas have limited output, and additional discrimination has resulted from a heavy excise tax, and by forcing the industry to use domestic butterfat, lard and tallow. Marketing margins have been narrowed by decree. The costs of the program have fallen most heavily upon the industrial worker. Wages remain at the same level as at the bottom of the depression in 1932, and while employment is greater, new deductions have lessened the employed workers' net income. Fat prices are well above their 1932 level and, even at these prices, supplies are frequently unavailable in the market. Thus far the results of the fat plan have not been impressive in closing the gap, nor does it appear to Dr. Brandt that it is likely to be in the near future.

In these days data relative to totalitarian countries are difficult to obtain and evaluate. It is in consequence significant to find a well documented statement by a competent authority. Indeed, if

any fault is to be found with the work it lies in the extensiveness of the detail. There are a number of places where the reader finds difficulty in sustaining his interest.

WARREN C. WAITE

University of Minnesota

Trends in Size and Production of the Aggregate Farm Enterprise, 1909–36, by Raymond G. Bressler, Jr. and John A. Hopkins, Works Progress Administration, National Research Project, Report No. A-6, Philadelphia, Pa., July, 1938, xiv+255 pp.

Trends in Employment in Agriculture, 1909–36, By Eldon E. Shaw and John A. Hopkins, Works Progress Administration, National Research Project, Report No. A-8, Philadelphia, Pa., November, 1938, xvi+163 pp.

These two reports, as the titles indicate, present data showing the volume of agricultural production and the productivity of agricultural labor during the period 1909–36. They are part of a series of reports[1] issued in connection with the research project, "Reemployment Opportunities and Recent Changes in Industrial Techniques" of the Works Progress Administration, under the general supervision of David Weintraub, Director, and Irving Kaplan, Associate Director, with John A. Hopkins, Economist in Charge of the section covering "Changing Techniques and Employment in Agriculture." The first of these two reports (A-6) makes available a new set of measures (indexes) of the total volume of agricultural production and of the total acreage of land worked and the numbers of livestock cared for by American farmers. These production indexes were especially constructed for the purpose of measuring the productivity of labor utilized in agriculture. Indexes of production per worker are shown in the second report (A-8) and were obtained by dividing the indexes of total agricultural production presented in the first report (A-6) by the indexes of agricultural employment presented in the second report (A-8).

The first report, after defining "aggregate farm enterprise" and establishing indexes to measure the volume of output, analyzes acreage and production of crops and of livestock numbers and

[1] A total of 31 reports (excluding the two covered in this review) had been issued by the end of 1938. These covered studies in types and rates of technological change and in production, productivity and employment in certain manufacturing, mining, and agricultural fields.

production for the United States as a whole, and for eleven specific areas for the period 1909–36. The indexes of production were obtained by weighting the quantities of the different products for each area by the relative number of hours of man-labor that went into their production in the period 1924–29, adding them together, and expressing the total weighted production series as percentages of the average of the period 1924–29. Since the same weights were used throughout the period 1909–36, the production indexes can change only because of changes in the physical amounts of the various farm products.

However, the authors are quick to point out that the resulting indexes of production per worker presented in the second report (A-8) do not indicate directly the changes in effectiveness with which the labor was used. They state that, for one thing, the amount of product per worker on farms has increased because some operations have been shifted from farms to cities, including some marketing functions, processing, grading, etc. They also point out that the production of farm products per worker has also been increased by the substitution of tractors and automobiles for horses. Thus, while the indexes of production per worker do measure the changes in quantity of product emerging from the agricultural industry per worker in that industry, they do not imply that the 1936 farm worker performed on each unit of product all those operations that were performed by the 1909 farm worker. The general tendency has been to shift operations to non-farm workers.

The two reports indicate that the increase in size of our total farm output from 1909 to 1930 was about 15 per cent, while the total population of the country increased from 92 to 123 millions or over 30 per cent during the same years. This does not mean that each acre of land or head of livestock yielded one-sixth more in 1930. This disparity between the growth in size of the total farm business and the growth of population is by no means entirely explained by increased production efficiency or improved production techniques as so many are wont to have us believe. The authors show, and correctly, that the release of a large acreage of land previously devoted to producing draft-animal feed for other purposes including the production of food for humans which has accompanied the shift to mechanical power, a shifting of some farm operations to urban industries, and changes in the export market

for agricultural products which occurred during the period covered in the reports, are important factors helping to explain this disparity.

The reports show that the size of enterprise taken care of by the average person engaged in agriculture increased by 23 per cent from 1909 to 1929. The increase varied considerably between the eleven areas. The enterprise per person increased most rapidly where there was the most increase in size of implements and in use of mechanical power and the greatest decrease in the number of horses on farms. On the other hand, the output per person engaged in agriculture increased over a third between 1909 and 1929. By 1936 the index was down to 93 compared with 103 in 1929 (1924–29=100), partly because of drought and partly as a result of the influence of the Agricultural Adjustment Administration programs. Although changes in amount of agricultural employment have differed between areas, the reports show that the general trend for the country as a whole has been clearly downward since 1909, the total agricultural employment being 10,997,000 persons in 1936 compared with 12,209,000 in 1909, or a decrease of 10 per cent. Approximately half of this 10 per cent decline has occurred in the decade 1926 to 1936.

The efficiency of farmers and farm production is a matter of considerable importance and widespread interest. These reports indicate a marked increase in farm producing efficiency as measured by output per worker, but no comparison is made with the trend in such efficiency in certain manufacturing or industrial lines. Reports already published by the Works Progress Administration indicate that such studies have been made of certain of these industrial fields.[2] A brief comparison with efficiency trends in these fields would have been very interesting and helpful. However, no reference is made to such a possible comparison in these reports.

The reports are, for the most part, well written, scholarly analyses, well buttressed with supporting data. However, they are largely factual and historical with little in the way of conclusions or interpretations regarding prospective trends and changes. While such interpretations may have been beyond the prescribed scope or plan of these reports, it would appear that they would have

[2] See for example the following reports already issued: E-6, Mineral Technology and Output per Man Studies: Grade of Ore. B-1, Labor Productivity in the Leather Industry. E-7, Technology, Employment, and Output per Man in Phosphate-Rock Mining, 1880–1937, etc.

been somewhat more useful and interesting had more been included. In spite of the authors' arguments justifying the cumbersome title of the first report, the reviewer believes that this volume would be less formidable if its title were "Trends in Size and Production of the Total Farm Business," or something similar.

The appendices in the second report add much to the value of this publication. The discussion in Appendix D is particularly good showing the shortcomings of census data on "gainfully occupied persons in agriculture." Appendix F raises many stimulating questions relating to part-time farming and the definition of farmers and persons occupied in farming. The two studies at several points throughout indicate the many weaknesses in and paucity of census and other data pertaining to agricultural employment, productivity per worker, and related phases, and should prove both stimulating and useful to workers interested in these important problems.

ROLAND R. RENNE

Montana State College

Research Methods on Farm Use of Tractors, by N. Jasny. New York: Columbia University Press, 1938, pp. xxvi+273. Columbia University Studies in the History of American Agriculture, No. 5. $3.75.

Methodological studies in the field of farm management are so rare as to be almost lost among the wealth of fact-finding researches. Nowhere are they more needed. Dr. Jasny and the Social Science Research Council, which aided him in collecting his material, are to be commended for their contribution to a sadly neglected but important field of investigation.

The first chapters are devoted to a very worth while classification of tractors by type and size and a discussion of grouping farms according to type of power. The author's plan for a size classification of tractors based on the Nebraska Tractor Tests is especially valuable. This is followed by a discussion of methods of computing tractor costs. The section dealing with the grouping of tractor costs presents some new ideas on the subject, but most of this chapter is marred by excessive emphasis on historical monetary costs and on relatively minor points. For example, the author "strains at a gnat" in his discussion of the basis of an interest charge but "swallows a camel" in neglecting even to mention the interest rate.

The chapter dealing with procedure in power investigations is stimulating but again the forward-looking aspects of the problem are under-stressed. A discussion of the basis for comparing costs of farm power brings out some important shortcomings in many tractor studies. The effect of the tractor on the whole farm organization is stressed in a chapter on adjustments of the cost of power. The effect of farm size on tractor costs and the selection of the area to be covered by a power study are considered in the final chapters. The appendix contains a valuable table of tractor ratings based on the Nebraska tests, and also some statistical and mathematical tabulation upon which suggested methods of cost calculations are based.

This book deserves careful reading and rereading by the experienced student of farm power problems. It can not, however, be considered a complete or comprehensive analysis of methods of tractor cost and use research. The reviewer is perhaps as much impressed with the important problems and methods that the author has overlooked as with what he has included. Particularly is he disappointed in finding no mention of the use of the "substitution" or "budgeting" method of studying the farm power problem. Too much emphasis is placed upon the computation of a single historical cost figure that will reflect all phases of the power problem and little or none on the use of power studies for securing basic physical facts for a forward-looking analysis of general or specific problems. Most experienced farm management researchers look askance at historical monetary cost figures of the type which are stressed in this publication. The newcomer in the field is particularly warned not to regard this as a complete or balanced treatment of the subject. This, however, should not detract from the credit due Dr. Jasny for his cultivation of a long neglected field. It is the reviewer's fervent hope that other workers may be stimulated by his contribution to a better balanced division of their time between fact-finding and methodological studies.

GEORGE A. POND

University of Minnesota

Farm Practices and Their Effects on Farm Earnings, Illinois Bulletin No. 444, by M. L. Mosher and H. C. M. Case.

This bulletin of approximately 135 pages is devoted to a discussion and an evaluation of common farm practices employed on

Illinois Farm Bureau Farm Management Service farms. While the study is a treatment of practices on Illinois farms, its application is certainly not limited to Illinois, or even Corn Belt farms. With the almost phenomenal growth of interest in soil conservation and program planning, its appearance is most timely.

Practices used in the production of corn, oats, hogs, beef cattle, dairy cattle, and poultry are discussed in Part I; Part II is given over to a treatment of the effects on farm income of such factors as crop yields, cropping systems, livestock efficiency, prices received, and costs for labor, power, and machinery. Only a few typical examples will be treated here.

It is shown (table 10, page 490) that on well-treated soils (throughout the presentation of results obtained from various cropping practices, the fields were classified into three groups according to fertility practices followed, and were designated well-treated, fairly well-treated, and poorly-treated soils) three cultivations were associated with an average yield of corn of 53.8 bushels per acre, compared with 52.3 and 52.7 bushels per acre respectively on fields cultivated four and five times. On poorly-treated soils three, four, and five cultivations were associated with average yields of 46.6, 48.5, and 46.7 bushels per acre respectively.

A summary of the gains in yield of corn brought about by following 14 practices which are considered superior is presented in table 20, page 499. Farms on which the soil was considered "well treated" and where the seed was selected from stalks before husking produced an average yield of 53.8 bushels per acre as compared with 52.3 bushels per acre on fields where seed corn was selected at harvest time. This is a difference of 1.5 bushels per acre. Similarly "well treated" soils which were seeded with corn that had been ear-tested for germination and disease, produced an average yield of 54.6 bushels per acre in contrast with 52.9 bushels per acre where this precaution was not taken. This is a difference of 1.7 bushels per acre. Twelve other similar comparisons were made; each showing a difference in yield of from 0 to 5 bushels per acre. The sum of the differences is 31.4 and is considered to be the total gain from good practices. Farmers who followed none of the good practices received a yield of 35.0 bushels per acre. Therefore, the farmers following all good practices would receive a total yield of 66.4 bushels per acre (35.0+31.4).

As another illustration of the method followed, table 44, page

526, gives the relation between age of weaning pigs and returns per $100 feed fed to hogs. Farmers who weaned pigs at 5 or 6 weeks of age obtained average returns of $124 per $100 feed fed. Farmers weaning their pigs at this age weaned an average 6.4 pigs per litter, fed 423 pounds of feed per 100 pounds of pork, fed 5.9 pounds of protein feed per 100 pounds of grain, and marketed 47.3 per cent of their hogs before January 1; hogs marketed during the autumn months generally brought higher prices than those disposed of after January. In contrast to this, farmers who weaned their pigs at 11 or 12 weeks of age obtained average returns of only $114 per $100 feed fed, but weaned only 5.8 pigs per litter, fed 447 pounds of feed for each 100 pounds of pork, fed 5.3 pounds of protein for each 100 pounds grain, and marketed only 38.3 per cent of their hogs before January 1. In other words, there is an inverse relationship between returns per $100 feed fed and age of pigs when weaned and feed fed per 100 pounds pork, but a direct relationship between returns per $100 feed fed and pigs weaned per litter, pounds of protein feed per 100 pounds grain, and proportion of hogs marketed before January 1.

These examples which are typical of those presented in the study bring up a few questions: (1) Are these differences in yields and returns really significant? (2) Are the differences in yields, or returns attributable to one particular practice, or are the results due to numerous practices or combinations of practices? That is, are the differences in yields of corn (example 1) due to the number of cultivations only or to differences in cultivations, type or variety of seed, treatment of seed, time of seeding, and so on. Is it logical, under conditions in example 2, to add the differences to arrive at a total yield from pursuing good practices? There seems to be so much intercorrelation in most of the cases (definitely portrayed in example 3) that one finds it almost impossible to determine the factor responsible for the difference.

Any study which reports results obtained from operations under actual field conditions rather than under laboratory conditions or controlled experiments where perhaps only two variants manifest themselves, is extremely difficult to present without confounding the results. Farm management specialists perhaps more than any other group of researchers, have to deal with actualities and are constantly confronted with the problem of isolating or accounting for the variation attributable to different variants. While the

farm management researcher is often prevented at the outset from laying out an appropriate design for his experiment, he fortunately has, in many instances, appropriate statistical devices with which he can manipulate his data and arrive at some definite conclusions.

Few bulletins contain as much timely and appropriate data as this one. For the most part it is based upon information on several hundred farms and several thousand fields for a period of eight years. It seems to the reviewer, however, that the data could have been subjected to statistical treatment such as analysis of variance, covariance, and in a few instances chi square, to good advantage. Appropriate statistical methods permit a more pointed and concise treatment and render possible the elimination of many complex tables. The average layman has little interest in the method of treatment; he has as little time for it as he has for reading numerous pages for results. He likes to be told. Statistical devices assist the researcher to accomplish this task.

WYLIE D. GOODSELL

Bureau of Agricultural Economics

Argentine Meat and the British Market, by Simon G. Hanson. Stanford University Press, 1938, 294 pp., $3.50.

The title of this book might better have been "A History of the Argentine Meat Industry," since it is largely historical in form and content and the limited space devoted to the "British Market" is largely incidental to this historical development. In giving an historical account of the development of the meat industry in the Argentine the author has covered the subject interestingly and fairly adequately. And since the meat industry is so closely tied up with the livestock industry the history of the meat industry in the Argentine necessarily involves a rather full account of the growth, changes and shifts in cattle and sheep production—the Argentine meat industry being limited largely to the products of these two species.

The generous footnotes and the accompanying bibliography indicate that the author has made use of a large reservoir of source material, both English and Spanish, and has attempted to supplement this in some cases by private correspondence and personal interview with persons who might be in position to throw some further light on controversial or uncertain matters. Whether his interpretation of this material has always been detached and im-

personal may be a question. The reviewer received the impression that the author had a preconceived prejudice against the large U. S. packers and that his account of the coming of these interests to the Argentine and of their growth to a dominating position in the meat industry of that country was colored by this bias. The markedly superior efficiency of operation in the slaughter of livestock and utilization of products developed in the plants taken over or constructed by the U. S. packers in comparison with practices previously prevailing, as well as the marked improvement in the methods of shipment and of distribution of meats in Great Britain, are somewhat grudgingly admitted. But it is hinted that the producers in the Argentine or the consumers in Great Britain, or both, had to pay well for these improvements in either lower prices for cattle or higher prices for beef resulting from the "monopolistic" control by the U. S. packers; but no effort is made to prove this except to show the apparent high profits made by these packers in some years.

It is quite evident from the references and statements in this book that the attitude toward the "Chicago" packers of governmental authorities, as well as of producers and consumers, in both Argentina and Great Britain has been strongly influenced by the "anti-packer" opinion once so widely prevalent in the United States and which resulted from the general tendency for this industry to be blamed by producers for falling prices of livestock and by consumers for advancing prices of meats and was intensified by such publications as Sinclair's "The Jungle" and the Federal Trade Commission Report of 1918. This attitude was also influenced by the natural reaction of the Argentinians against "foreign" control of their most important industry and of the British against the non-British control of the volume and the distribution of a large segment of their meat supplies.

Relatively little space—and this largely piecemeal—is given to an economic analysis of the meat industry in order to point out the factors that have been of importance in determining the trends of this industry in the Argentine and of its relative position in world trade. Such an organized and rather detailed analysis would be quite helpful for a more complete understanding of the relationship of the Argentine meat industry to the British market and might have tended to change somewhat the author's interpretation of some situations.

The discussion of the more recent developments in the meat industry both in the Argentine and in other countries as indicating the present situation and probable future facing livestock producers might well have been expanded. A useful addition would have been an outline map of the Argentine giving the boundaries of the various provinces which would enable the reader, unfamiliar with the geography of South American countries, to understand better the expansion and shifts in livestock production which are described in considerable detail.

C. L. HARLAN

Bureau of Agricultural Economics

The Changing Relative Importance of the Central Livestock Market, by Edward A. Duddy and David A. Revzan. Chicago: The University of Chicago Press, 1938, pp. 122, $1.00.

This book by Messrs. Duddy and Revzan is an interesting and informative contribution to the subject of central livestock marketing. While the point of view is not greatly different from that of a number of other studies in this field, some new material is introduced and the old is carefully synthesized.

The first part of the book is devoted to a description of central livestock markets and the changes which have taken place in them during the last 100 years. The swing in the packing industry from decentralization to centralization and back again is fully traced. Especially commendable is the effort on the part of the writers to explain changes in market organization in terms of such basic factors as transportation developments, artificial refrigeration and shifts in areas of livestock production.

The authors advance the plausible thesis that the high costs of terminal marketing have induced farmers and packers to deal directly with each other in order to avoid some of these costs. They then attempt to prove this by showing that the proportion of hogs marketed direct has tended to increase as the spread between the Chicago price and the farm price (expressed as a percentage of the Chicago price) has increased. Since transportation and marketing costs are relatively inflexible, this percentage spread will of course vary inversely with changes in the price of hogs. What this has to do with the fact that terminal costs may be high as compared with those of direct marketing is not clear. Certainly one would hardly expect to find in this *fluctuating* percentage spread a satis-

factory explanation of the *steady* increase in direct marketing. The writers nevertheless maintain that there is a close and causal relationship although their figures show that it has existed in only 10 of the last 16 years. If the object was to prove that high terminal costs have contributed to direct marketing, it would have been far more convincing to have analyzed the actual costs incurred under the two methods of marketing.

A. C. HOFFMAN

Bureau of Agricultural Economics

Farm Credit in Canada, by W. T. Easterbrook. [Toronto] University of Toronto Press, 1938, 260 pp., $2.50.

"This essay is a study in Canadian agricultural history. It is an attempt to trace the influence of factors in Canadian economic development which have been of most significance for problems of farm credit. A history of farm credit up to the advent of provincial lending agencies in 1917 has been sketched as a background to a study of government intervention since the war. The relation of state action in credit to other forms of government assistance to agriculture has been suggested." Thus does the author preface his book.

The first four chapters of the book, composing Part I, are concerned with the period before the World War. These chapters describe the colonization and settlement of Canada, the emergence of agriculture from a self-sufficing pioneering enterprise to a matured, commercial enterprise, and the governmental measures taken to facilitate the development of agriculture. One is impressed with the similarity of early Canadian development to development in the United States as described by Sparks in his "History and Theory of Agricultural Credit in the United States." There was the same dependence of farmers on credit extended by merchants and traders during the period of colonization, the same early dependence of merchants and traders on British credits, and the same ultimate development of banks and other financial institutions, operating largely with domestic capital, for serving the financial requirements of both countries. The economic and financial history of Canada following the period of colonization also bears close resemblance to that of the United States, and the financial fortunes of Canadian farmers paralleled those of farmers in this country.

From the standpoint of agricultural credit, the chief difference

between developments in Canada and the United States prior to 1900 were that: (a) the Canadian banking system apparently confined itself much more closely to credits of essentially short-term character than did banks in the United States; and (b) so far as institutional investors are concerned, long-term agricultural credits in Canada were supplied mainly by mortgage loan associations (building societies), whereas in the United States such credits were supplied principally through the commercial banking system (including the early land banks which often were scarcely distinguishable from commercial banks). Segregation of functions as between short-term and long-term credit institutions appears to have given Canada a sounder banking system, and Canadian farmers a less liberal but more dependable source of short-term credit, than was enjoyed by farmers in the United States.

Part II, comprising the remaining six chapters of the book, is devoted to the provincial and Federal measures enacted for the encouragement of agriculture from the latter part of the last century to the outbreak of the 1929–32 recession, and to the debt-adjustment activities undertaken in an effort to relieve the positions of farmers during more recent years. Governmental paternalism apparently embraced a wide range of activities in the interest of Canadian agriculture. There were appropriations for loans to be used in making emergency feed and seed advances, appropriations for the assistance of cooperatives, appropriations for settlement, development, and improvement purposes, appropriations for the establishment of provincial farm loan boards and associations, and other appropriations too numerous to mention. In addition, the Federal Government established a farm loan system, and both the Federal and provincial governments established public bodies to assist in the debt adjustments made necessary by the depression. Farmers in the prairie provinces were the principal beneficiaries of governmental aid for both development and relief purposes.

This portion of Canadian history also resembles that of the United States. Single-crop farming in both countries has been the source of much agricultural distress. The provincial loan boards established in Canada to finance agriculture apparently followed the same liberal policies and had the same lack of success as the State loan funds established in this country. In both countries, also, governmental aids to settlement and for the relief of distressed farmers often have had the effect of opening up, and maintaining

farmers on lands poorly suited to agriculture. A significant difference between measures adopted in Canada and the United States, however, is that in Canada it frequently has sufficed for governmental bodies to guarantee loans to farmers, whereas in this country governmental aid usually has had to be extended in the form of direct loans. This difference apparently is explained by the superior strength and cohesion of the Canadian financial structure.

The book is exceedingly difficult to read, partly because it is a veritable encyclopedia of acts and measures, and partly because of a certain obscurity in the author's style. Interpretive analysis is hardly sufficient to hold the facts together. Of the 260 pages, 85 are devoted to notes and references. Despite these objectionable features, however, the book will serve as an excellent source of information on farm credit in Canada.

FRED L. GARLOCK

Bureau of Agricultural Economics

Union Internationale pour l'Étude Scientifique des Problèmes de la Population, Congrés International de la Population, Paris, 1937. Paris: Hermann et Cie, 1938. 8 volumes.

The proceedings of this Union continue to provide an indispensable digest of research on all phases of population. Specialists in population will read all the reports, but readers of this Journal will be interested principally in the articles mentioned in the following paragraphs.

Three general remarks may precede our specific summaries. As an editorial and publishing job, this proceedings falls below the level of the previous report published in Germany. There is a definite tendency for the scope of research reported at these congresses to widen to include fewer strictly demographic studies but more broadly social science approaches. And the growing role of scholars in the United States is reflected in the number of papers originating here.

The first volume, on the general theory of population, contains discussions in the ecological control of population (Mukerjee), regional variations in population growth (Giusti, Rhodes, Lewandowski and Linn), international migration (Ravnholt), and specialized papers on fertility and mortality.

Volume two treats historical demographic changes, from which the papers on Augustan marriage laws (Ciccotti) and the settlement of French Canada (Langlois) may be mentioned.

Of the papers on statistical demography in the third volume we refer to Notestein's report on rural families in China, the demographic evolution of a French commune (Mauve), Carr-Saunders and Walshaw on Irish population changes, and Roubakaine's analysis of Russian data.

Volume four contains more specialized statistical studies, including one on the agricultural implications of the population prospect in the United States (Baker), Mexican data (Robles), relation of soil fertility to migration out of agricultural (Müller) agrarian immigration into France (Mauco), migration and economic opportunity in the United States (Goodrich), rural migration in the United States (Lively), urbanization in Poland (Fogelson and Ormicki), and depopulation of Italian mountain regions (Giusti).

The fifth volume covers births, marriages, and death. Glass analyzes the correlated fluctuations of economic conditions and marriages, variation of births with urbanization in Poland is pictured by Adamowicz, and Dorn compares rural and urban sickness rates.

The sixth volume relates only to French colonial populations.

Next is a group of studies on demographic evolution; they are of general significance.

The final volume discusses qualitative problems. Although none of these are specifically rural in implications, they should be consulted by anyone interested in this general problem.

C. ARNOLD ANDERSON

Iowa State College

Readjustments of Agricultural Tenure in Ireland, by Elizabeth R. Hooker, Chapel Hill, N. C.: University of North Carolina Press, 1938. Pp. 245, $4.00.

What has been the experience of other countries and what have they done about farm tenancy? This has been the question in many minds as the United States Government has launched its attack on the tenancy problem. At the congressional hearings particular interest was displayed in the experience of Ireland. Demand for accurate information as to the nature of the problems there, their likeness to ours, and Ireland's method of meeting them was insistent. The study on which this book is based was designed to give us just this detailed, related knowledge.

The book opens with a revealing chapter devoted to historical

antecedents of the tenure situation. But the preeminent claims to usefulness from the strictly practical point of view are found in the preface and the chapter called Final Considerations and Queries.

In the preface the author outlines the five leading tenure problems affecting the agricultural population of Ireland during the last three-quarters of a century and indicates their counterparts in rural America today. In the final chapter she shows concisely the significance of experiences of Ireland for other countries that are confronted by similar problems, how the various programs of readjustment for Ireland were related to each other, what each series of operations accomplished, wherein the methods used differed from those used in Denmark, and how they compare with those used in our own country. The question whether the results are likely to endure is considered in relation to advantageous and disadvantageous conditions and circumstances surrounding each of the chief phases of readjustment. The question-and-answer method used in this chapter makes it excellent for quick reference.

The first problem dealt with was the reform of landlord and tenant relations, based on the act of 1870 which provided, among other things, for the legalization of customs relating to tenancy, compensation for improvements, compensation for disturbance and conversion of tenants into owners. Amendments to this law, Fenian activities, Parnell's support, the Land League, and the Irish National League all aided to bring about satisfactory results.

Then came the long period during which tenants were being changed into land owners—the periods of experiment, of expansion, of general land purchase, and the period of completing the farm ownership program, beginning in 1922 and extending to the establishment of the Republic of Eire in 1937. Meanwhile, the distribution of land through various other methods was being effected, so that the tenure map was gradually remade to a surprising extent.

Rehabilitation of submarginal areas is illustrated in the work under the Congested Districts Board, conducted chiefly in western Ireland where the effective resources were exceedingly low in relation to the population and where the Board has achieved some striking results. The author's analysis of the successful carrying out of a low-cost housing program for rural laborers has evident significance for this country in spite of the fact we are at present busy chiefly with city housing reforms.

It is to be remembered that throughout these years Ireland has

been handicapped by a dearth of either resources or adequate elementary schooling among the majority of those for whom the programs were designed. The work was hampered in nearly every phase by the fact that in spite of the efforts of the leaders the people just did not understand what it was all about. The fact that such progress has been made under these conditions is encouraging for other lands.

Appendix tables, a bibliography, and a map add to the volume and full documentation further strengthens the book throughout.

CAROLINE B. SHERMAN

Bureau of Agricultural Economics

The Orange Industry: An Economic Study, by J. M. Thompson. Bulletin 622; California Agricultural Experiment Station, June 1938.

Maintenance of Substantial Equity in the Pooling of Lemons, by H. R. Wellman and M. D. Street. Bulletin 619, California Agricultural Experiment Station, May, 1938.

Both of these studies of the fruit industry of California contain information that should prove useful to various groups concerned with the production and distribution of fruits from other states, as well as to those who are directly connected with the California branches of the industry. The bulletin dealing with the orange industry presents information concerning the acreage, production, shipments, prices, consumption, imports, exports, and related matters by states for the United States, together with more limited data concerning the orange industries in other countries. Recent trends are discussed rather fully and in a few cases some attempt is made to indicate the probable direction of future trends. Thus, it is indicated from data showing the acreage of bearing and non-bearing trees in California that production will probably continue to increase for some years. The bulletin is primarily valuable because of the broad general picture of the orange industry which it presents, rather than for any specific suggestions which it contains concerning the concrete problems facing people in the industry. It should serve as an excellent foundation for future detailed studies of specific problems of importance to the industry.

The discussion of the pooling of lemons is of an entirely different character and purpose. It deals with the specific problem of how to maintain equity between members of local cooperatives who

pool their fruit for sale. It appears from the study that in order to treat each member equitably, it is necessary to establish pools for grades, sizes, colors, by-products, and periods of time. Obviously the total number of pools that may be involved is considerable. The expense of sorting each member's fruit into the desired number of pools and keeping accounts accordingly may be great enough to reduce the total net returns received. This raises the problem of how to achieve substantial equity between members with the least possible addition to the expenses of operating the association. Most of the analysis is based on information secured from a single packing house; consequently, there would seem to be some question concerning the application of the conclusions to cooperative lemon packing plants generally. However, the bulletin does succeed in illustrating the nature of many problems connected with equitable pooling. This may be of benefit to various groups even when the more detailed suggestions for changes in practices are not applicable.

ROY A. BALLINGER

Louisiana State University

NEWS ITEMS

The death of our President, Professor I. G. Davis, has come as a shock to his friends and associates. As newly elected President of the American Farm Economic Association he has already given much thought to plans for the program for the next annual meetings. His death places the responsibility of the Presidency of this association upon F. F. Elliott of the Bureau of Agricultural Economics. Mr. Elliott is now taking up the program for the next annual meetings where Professor Davis left off.

E. C. Ladd, Asher Hobson, E. C. Young, H. C. M. Case have been elected members of the Council of the International Conference of Agricultural Economists. They will hold office until the close of the next conference which has been scheduled for Hungary in 1941.

Joseph Ackerman, formerly Associate in Farm Management in the Department of Agricultural Economics at the University of Illinois, has accepted a position with the Farm Foundation, Chicago, Illinois. Doctor Ackerman is working on the problem of land tenure.

Arthur Anderson has been appointed Assistant in Agricultural Economics, University of Minnesota.

E. T. Benson resigned his position as extension economist with the University of Idaho Agricultural Extension Service to accept the position of secretary of the National Cooperative Council in Washington, D. C.

Herbert A. Berg, Extension Specialist in Farm Management at Michigan State College has been appointed acting head of the Department of Agricultural Economics during the absence of Prof. Hill.

Robert H. Black, in charge of the Minneapolis office of the Grain Division of BAE for nearly 8 years and a member of the staff since 1918, was brought to Washington in January to direct the grain standards and testing research activities. Morton J. Johnson, for the past 2 years in charge of the Milwaukee office of the Grain division, has succeeded Mr. Black at Minneapolis.

A dockage inspection service for country-run forage seeds, to be known as the Seed Dockage Inspection Service, was announced by the Bureau of Agricultural Economics last October.

Several months ago the Livestock, Meats, and Wool Division of the Bureau of Agricultural Economics set in operation a new wool scouring laboratory. The scouring tests performed in the laboratory are part of the program of shrinkage research with which is coordinated a program of clip sampling in the wool producing sections of the country.

The Bureau of Agricultural Economics is cooperating in a program of the AAA designed to improve marketing practices and to demonstrate to foreign spinners the high quality of American cotton being produced in one-variety communities.

State representatives of the Bureau of Agricultural Economics met in Washington in March to confer on the new activities of the Bureau as contemplated in the reorganization of the Department of Agriculture. The conference was concerned particularly with county planning activities.

William S. Crawford has been appointed instructor in Agricultural Economics in the Tennessee College of Agriculture.

Approximately 65 representatives of the cotton industry of foreign nations and the United States attended the Seventh International Cotton Standards Conference in Washington, D. C., the week of March 13. Associations signatory to the international agreements represent England, France, Germany, Italy, Belgium, Holland, Spain, and Japan. Three associations of Japan became members of the agreements in January.

Dean Chris L. Christensen was recently elected President of the American Country Life Association.

James H. Clarke has accepted a position as Assistant Extension Economist with the Agricultural Extension Division of West Virginia University. Mr. Clarke was employed in the Department of Markets and Rural Finance at the University of Kentucky prior to accepting the West Virginia position.

A statistical section for seeds, under the direction of George C. Edler, senior marketing specialist, was established in October by the Bureau of Agricultural Economics.

Frank M. Fitzgerald has been appointed Assistant State Supervisor of Rural Research by the Works Progress Administration, in cooperation with the Tennessee Agricultural Experiment Station.

W. E. Grimes, Head of the department of Economics and Sociology, at Kansas State College will spend the spring months in Chicago working on a cooperative project between Kansas State College and the University of Chicago. Also, he will give graduate instruction in the University of Chicago as Visiting Professor of Economics. This cooperative project is one of several such projects entered into with middle western states by the University of Chicago. Members of the staffs of colleges giving instruction in agricultural economics are invited to come to the University of Chicago for one quarter as Visiting Professors. This quarter is spent in giving graduate instruction in agricultural economics and in study of Chicago as a terminal market for products of the middle west and in

such other studies as the visiting staff member wishes to engage in.

H. W. Hannah, who has been Assistant to the Dean and Director, College of Agriculture, University of Illinois, joined the staff of the Department of Agricultural Economics of the same institution in February, 1939.

H. P. Hanson, who had been in charge of Farm Management research and teaching work at South Dakota State College since April 1936 left that institution in February, 1939, to accept a position as Land Use Planning Specialist with the Extension Department at the University of Minnesota.

Albert G. Hart of the Department of Economics of the University of Chicago has been appointed Associate Professor in Economics at Iowa State College.

J. S. Hathcock has accepted the position as principal Examiner with the United States civil service commission.

Harold Howe will serve as Acting Head of the Department of Economics and Sociology at Kansas State College during Dr. Grimes' leave of absence.

Trimble R. Hedges, formerly Associate Professor of Agricultural Economics at Oklahoma A. and M. College, has accepted the position of Associate Professor of Rural Economics and Sociology, University of Arkansas College of Agriculture.

E. B. Hill, Head of the Department of Farm Management at the Michigan State College has been granted a year's leave of absence effective December 1, 1938, to accept a temporary appointment as Head of the Department of Agricultural Economics of the Insular Agricultural Experiment Station of the University of Puerto Rico at Rio Piedras.

T. G. Hornung resigned his position as Extension Economist—Farm Management, effective March 1, to accept the position of Regional Economist—Flood Control Section, Bureau of Agricultural Economics with headquarters at Lincoln, Nebraska.

Erwin Keeler, senior agricultural economist of the Foreign Agricultural Service, left the United States last fall for South America for the purpose of making a study of the agricultural and economic resources of Brazil and Venezuela.

A. B. Lewis has taken leave of absence from the Economic and Credit Research Division, Farm Credit Administration, until June 30, 1939, to teach a course in Land Economics at Cornell University.

John Liles has accepted a position as Extension Economist with the Alabama Extension Service, Auburn, Alabama.

Louisiana State University has purchased the private library of Dr. R. T. Ely.

When the Permanent Committee of the International Institute of Agriculture held its October meeting at the Institute at Rome, they elected the American delegate, J. Clyde Marquis, as Vice President for the next 3-year term. This is the first time that an elective office has been held by a representative of the United States.

William G. Meal was appointed leader of the Division of Fruits and Vegetables in the Bureau of Agricultural Economics, succeeding Mr. Sherman.

The Eighteenth International Congress of Agriculture will be held in Dresden, June 6–12.

O. L. Mimms resigned February 15 from his position as assistant professor, College of Agriculture, University of Idaho and assistant agricultural economist, Idaho Agricultural Experiment Station to accept employment as associate agricultural economist with the Bureau of Agricultural Economics, Division of Land Economics, with headquarters at Berkeley, California.

Aaron G. Nelson accepted a position in charge of Farm Management research and teaching March 1939, at South Dakota State College. Professor Nelson was formerly at Iowa State College.

Truman Nodland has been appointed Instructor in Agricultural Economics, University of Minnesota.

Gordon Ockey, previously employed with the Statistical and Historical Research Division, United States Department of Agriculture, has been appointed Assistant Director of Research, Farm Credit Administration of Berkeley.

The appointment of Carl B. Robbins as Assistant Director of Marketing and Regulatory Work was announced in November by the Department of Agriculture. Doctor Robbins is associated with Dr. A. G. Black, who was named Director of Marketing and Regulatory Work in the departmental reorganization announced in October.

Geo. S. Wehrwein will teach in the Summer Session at Fort Collins, Colorado, this year.

R. B. Westbrook resigned at South Dakota State College February 1, 1939, to complete his work for the Ph.D. at the University of Minnesota. Except for a leave of absence during 1937–38, Professor R. B. Westbrook had been at South Dakota State College since April 1934.

John E. Wills has resigned as associate professor of Agricultural Economics at University of Tennessee to accept the position of State Land Planning Specialist by the Bureau of Agricultural Economics in cooperation with the Tennessee Agricultural Experiment Station. He will be stationed at Knoxville, Tennessee.

The Foreign Agricultural Service Division was transferred from the Bureau of Agricultural Economics to the Office of the Secretary, effective December 1, 1938, by order of Secretary Wallace.

L. A. Wheeler, who has been connected with the foreign work since 1926 and in charge of the division since 1934, was designated Chief of the Foreign Agricultural Service.

C. O. Youngstrom has been appointed as extension economist with the Agricultural Extension Service of the University of Idaho. Mr. Youngstrom was formerly associate economist with the Idaho Agricultural Experiment Station.

George A. Sallee, formerly of the University of Minnesota, has been appointed Agricultural Economist in the Bureau of Agricultural Economics.

T. W. Schultz will be on leave from Iowa State College to become a member of the summer school faculty of the University of Chicago, where he will offer two courses, "Economic Analysis and Agricultural Policy," and "Current Agricultural Problems."

Wells A. Sherman, in charge of the fruit and vegetable marketing work of the Bureau of Agricultural Economics retired in July, after nearly 43 years of active service in the Federal Government. Mr. Sherman expects to maintain his permanent residence at Ash Grove Farm, McLean, Va.

H. C. R. Stewart, senior agricultural statistician in the Washington, D. C., office of the Division of Crop and Livestock Estimates, Bureau of Agricultural Economics, has been transferred to Portland, Ore., to take charge of the Oregon-Washington office of the division.

The Tennessee Agricultural Experiment Station and the Tennessee Valley Authority are conducting a joint study of farmers business associations in Tennessee. Charles E. Allred and Benjamin D. Raskopf are representing the Experiment Station on the study.

F. R. Tomlinson, Economist in the Division of Economics and Markets, Department of Agriculture, Union of South Africa, was appointed professor of Agricultural Economics at the University of Pretoria, South Africa, and started his new work the beginning of 1939.

James D. Toy, previously employed by the Production Credit Corporation of Louisville, has been appointed Director of Research, Farm Credit Administration of Louisville.

CLARENCE L. HOLMES
1879–1938

American agriculture lost a capable leader in the passing, on December 16, 1938, of Dr. Clarence L. Holmes, who until his earlier illness in 1937 was in charge of the Division of Farm Management and Costs, Bureau of Agricultural Economics, United States Department of Agriculture. He was a recognized leader in teaching and research in the field of Agricultural Economics, both in Minnesota and Iowa before his affiliation with the Bureau of Agricultural Economics, in 1929. His book, Economics of Farm Organization and Management, which was published in 1928, is widely used.

Dr. Holmes was born January 22, 1879 and reared on a farm near Lansing, Iowa. Before starting his professional career he homesteaded land and farmed in South Dakota. In 1907 he was graduated by the University of Michigan with an A.B. degree in history and economics. He received the degree of Doctor of Philosophy at the University of Wisconsin in 1920. From 1919 to 1921 he was Assistant Professor of Agricultural Economics at the University of Minnesota. From 1921 to 1923 he was Assistant Chief of the Agricultural Economics Section of the Iowa Agricultural Experiment Station and Associate Professor of Agricultural Economics in Iowa State College. In 1923 he was made Chief of the Agricultural Economics Section of the Iowa Station and Professor of Agricultural Economics in Iowa State College. From that position he went to the Bureau of Agricultural Economics in March 1929 to take charge of the Division of Farm Management and Costs, in which capacity he served until the fall of 1937 when stricken with heart disease. In April 1938 he resumed work in the Division as Principal Agricultural Economist to coordinate and direct farm management research in regional agricultural adjustments.

THEODORE B. MANNY
1897–1938

Theodore B. Manny, collaborator of the Bureau of Agricultural Economics and head of the Department of Sociology, University of Maryland, died in Washington September 26. Dr. Manny was formerly senior agricultural economist in the Division of Farm Population and Rural Life, Bureau of Agricultural Economics, and at the time of his resignation in 1935, had been acting in charge of the division since the retirement of Dr. C. J. Galpin, in

1934. He came to the Bureau in 1937 to make psychological studies of rural population, but later became interested in rural municipal government. Dr. Manny was born March 12, 1897. He was graduated from the University of Illinois and received his M.S. and Ph.D. degrees at the University of Wisconsin, serving at the latter institution as instructor in sociology. He also taught at Hendrix College, in Arkansas, before coming to the Bureau.

FRANK W. BRUMLEY
1904–1938

With the recent death of Dr. Frank W. Brumley, workers in the field of agriculture were deprived of a sincere friend and co-worker. A native of the South, Dr. Brumley was born on a farm near Gainesville, Florida on July 29, 1904. He received his B.S.A. and M.S.A. degrees from the University of Florida in 1926. He was appointed Instructor of Farm Management at the University of Florida that same year and was promoted to the rank of Assistant Professor in 1929. In 1930 he was appointed Extension Economist in Farm Management at the University of Florida, a position he held until he resigned September 1, 1937 to accept an appointment at Louisiana State University. In 1934–1935 he completed his graduate work at Cornell University and received his Ph.D. degree. During the first nine months of 1937 he worked with the Agricultural Extension Service of the United States Department of Agriculture as Farm Management Extension Economist for the Southern Region.

While at Louisiana State University, as Professor of Farm Management, he has divided his time between teaching and research. He died at his home in Baton Rouge, Louisiana on December 8, 1939 after a very short illness.